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ARTICLE I.

The Conservative Treatment of the Dental Pulp.

BY RICHARD GRADY, D. D. S.

The history of medicine abundantly proves that many of the so-called incurable disorders of the human system are not so in reality, but only apparently beyond the reach of restorative influence for the time being, from imperfect knowledge of their true character, the proper means of relief and the recuperative power of nature. The natural history of disease shows that the most intractable disorders will sometimes resolve spontaneously by the unaided efforts of nature; and, if they do so occasionally without extraneous assistance, is it not reasonable to infer that they would do so more frequently by the aid of enlightened art? Hence in the treatment of all so-called hopeless cases, intelligent and persistent effort should be made not only to relieve immediate suffering, but to correct derangement of every kind and promote complete recovery, giving the patient the benefit of the doubt in every instance, by working steadily for a favorable result even in the most unpromising conditions.

A tendency to conservatism in medicine, surgery and dentistry, is a distinguishing characteristic of the healing art of the present day. The surgeon is no longer ambitious, as formerly, to be distinguished by his brilliant operations. On the contrary his reputation depends upon the intelligence, care and skill with which he labors to preserve and restore members and functions. To preserve the integrity of the physical organism and of the vital forces, and to restore diseased or wounded members whenever possible, may, therefore, be said to be alike the leading principle of surgery, of medicine and of dentistry.

The dentist is constantly called upon to extract teeth for the relief of pain and suffering, which, if he is properly educated and posted in his calling, he is quite certain need not be lost; and which, if he is honest to himself, he will refuse to extract. In operations on the teeth, conservatism may be displayed in a manner to which few give much heed. The dentist is in duty bound, to keep and to guard that portion of the human body which it is his province to treat, as much as the general surgeon is to save to the uttermost that which lies within the province of his art to treat. In fact, there are those in the profession who hold that there is a moral obligation binding upon all men not to mutilate the human body in the slightest degree beyond what is actually demanded as a "dernier ressort," to remove otherwise incurable disease, or in case of extreme suffering, or for the removal of obnoxious deformities.

Let us, then, inquire as to the present status of the profession as regards this sort of practice, how we stand as in relation to the past, and what can be forecast regarding the future, touching some of the prominent points in relation to the subject which seem to demand special attention.

It is comparatively of late years that the pulps of teeth have received anything like conservative treatment from the majority of the dental profession. "*Vis medicatrix naturae*" was not in their dictionary. They had yet to learn the possibilities of nature in her efforts at restoration.

The general practice was to extirpate recently exposed pulps by the surgical or "heroic" operation; and, if this was impracticable, to devitalize them by the use of arsenious acid or the partial luxation of the aching tooth. For many years the essential oils, as sassafras, cloves or cinnamon, were used to devitalize the pulp; in the present day we successfully employ the same essential oils, being guided by knowledge and judgment in their use, for pulp-preservation instead of pulp-devitalization.

Formerly, "some of the most eminent in the profession extracted teeth as soon as the pulps became exposed; some cauterized the surface of the pulps and plugged over them; some used astringents, nut-galls, etc., for an indefinite time and then plugged over them; some plunged a hot instrument into the pulps and then plugged the teeth; others adopted a more refined method, and used the instrument in its cold state; some treated sensitive dentine with the hot instrument. Of course, this was all done, it seemed as if the dental pulp was a sensitive vermicule in a little hole in a bone, and all that was to be done was to kill it with a stunning blow, worry it to death, or smother it by prolonged suffering, or punch it to death with a steel instrument, without the least idea that it was connected with a *living human brain!* and was through that means capable of shocking the whole frame."

When we thus turn back in Dental History, and compare this practice of less than half a century ago with the conservatism of to-day we may reasonably open our eyes in wonder and admiration, and call to mind the old adage of "extremes meeting." In those days it would have been considered absurd, if not quackery, to talk about or advocate the practice now in vogue. Then arsenious acid was looked upon as the most important article in the dental pharmacopœia, because it enabled the dentist to achieve far more in conservative dentistry than any other one thing. But this so-called conservative dentistry meant the preservation of a tooth minus the pulp, "the shell without the kernel."

To-day results not then dreamed of are attainable, and the conservation of the dental pulp is paramount in preserving the teeth. It must not be understood that the writer forgets that the employment of arsenious acid was one of the most important steps taken by the profession, for prior to its use, aching teeth were invariably extracted, as there was no known remedy by which they could be placed in a comfortable condition. Millions upon millions of teeth with exposed pulps have been treated with it and rendered serviceable for years. But, like other useful agents, it has been injudiciously used.

The more the dentist learns about the dental pulp the more convinced does he become that the preservation of the pulps of teeth is an attainment of the first importance, and that it is his duty, as a practitioner of the healing art, to do away with this destructive surgery and make every effort to the conservation of this organ whether in health or disease, because the integrity of the tooth is compromised in every case of destruction, the enamel and dentine becoming friable and portions breaking away. To enable our patients to retain their teeth for a long period of usefulness, should, therefore, be the aim of every member of the profession.

While it is admitted that no class of cases in dental pathology is so hazardous and uncertain in diagnosis and successful treatment as that of the dental pulp, yet it is generally acknowledged that pulps can be saved, that pulps have been saved, and that they are susceptible to the same treatment as other tissues, and when injured must be repaired through a physiological process to restore them to a normal condition. Recognizing the demands of this conservative principle, earnest men in the profession, believing it within the range of possibility, within the unfoldings of dental pathology, within the reach of the persevering student of dentistry, thirty-five years ago, or thereabouts, turned their attention toward devising some method of treatment of exposed pulps which should render it possible to fill such teeth and retain at the same time their vitality.

The advance made in this direction gives great encouragement to hope that the day is not distant when conservative dentistry shall be crowned with the well-deserved praise of carrying healing on its wings.

The pulp tissue is usually intolerant to the presence of foreign bodies; yet nature tolerates a certain amount of effusion. When creasote is applied to the pulp a tissue is formed which is not entirely without vitality, and which may after a time become organized again. Seeds have been preserved alive for hundreds of years; teeth have been transplanted and yet their vitality has been retained; some plants may be dried and kept for an indefinite time and they will revive when moisture is applied to them. How far may this be carried? There is a deposit of cells upon the outside of the living mass of the pulp, and the cells grow until the part is bridged over and the space filled up by their growth extending from point to point of the tooth as the pulp recedes.

When it is recollected that fully nine-tenths of the practice of dentists, apart from mechanical work, involves some treatment either directly or indirectly of the dental pulp, the importance of our subject may be realized: *directly*, the treatment of the pulp, its exposure and its death resulting in alveolar abscess, gives more trouble and anxiety to patient and dental practitioner than any other operation which he is called upon to perform; *indirectly*, even in simple cases of filling when the pulp is not exposed, the dentine through its influence is more or less sensitive.

The capping of a pulp or its extirmination is a small operation in dentistry, but a great one in the saving of a tooth. Sometimes as much skill is required to save a pulp as to save a limb. It is not possible to save all pulps alive, but we may, perhaps, adopt a method of saving many. When pulps are nearly exposed, the dentine may recover its vitality, the salts of lime may be again deposited and thus the pulp be preserved. When the pulp is in a state of suppuration we must consider the condition of the patient, and the result may possibly be dependent on this condition.

Exposure of a pulp in a healthy condition by excavating, is so readily treated and the conditions of the organs so different from those which exist when it is laid bare by disease, that we can hardly draw a comparison between the two cases; yet if we are able to make the latter imitate the former by causing the exposed, ulcerating surface it may be, to assume a healthy one we may surely hope for an equally successful result.

The office of the pulp during a state of healthfulness is not the formation of secondary dentine any more than it is the office of the periodonteum to produce exostosis. Still we know from observed facts, that, under the influence of unusual stimuli, each of these organs is capable of performing this excess of function. Stimulation must, therefore, be moderate, else the primary office of the secreting organ will be impaired through the exhaustion, and normality thereby compromised. Over-stimulation amounts to irritation, and irritation leads to depressed vitality and death.

Surely, then, no one in this enlightened age will deny that a tooth containing a healthy living pulp is of more value than if pulpless; therefore, it is desirable and worth any reasonable effort to preserve the vitality of the pulps of teeth, if it be possible to do so.

In order to appreciate the slightest deviation from health it is necessary to consider what a normal pulp is, and its action in a normal condition. Dental pulps, like all constituents of human bodies, are made up of elements. These consist of four or five arteries and as many veins and nerves held together by connective tissue. Pulps are nourished by pabulum, taken from the blood, which is received through openings in the roots. The pulp diminishes in size with advacing age, the cells covering its surface being converted into dentine. It is not only the mother to the tooth, so to speak, but it is generally recognized as the proper organ through which the tooth receives its nourishment, and therefore, there can be no real safety to the tooth without the pulp in its normal condition; although Mr. Tomes claims

that its purpose in a finished tooth is unknown, as also why the tooth should not do just as well without it. In perfect health it may be touched and even incised, (provided it is not pressed) and display little sensibility.

After irritation of any character has continued for a short time, the pulp becomes highly sensitive, and cannot bear contact as it did in a healthy condition. By irritation, then, the pulp is placed in a pathological condition which may lead to the loss of the tooth, if it does receive proper treatment. But with proper treatment, there is no reason why the pulps of teeth, in certain cases to be hereafter named, may not be restored to health as well as other parts of the system having nutrition, circulation and absorption. It is, however, advisable to be thoroughly assured of the life of the pulp; for it would be a less evil to expose a pulp possessed of vitality than to fill a tooth with the decomposed pulp-tissue remaining in it. To determine this question the usual tests, such as percussion, applying streams or jets of hot and cold water, or gentle probing with an excavator in the locality of the pulp chamber, must be resorted to. There must, however, be no uncertainty as to the life or death of the pulp.

Sometimes, in cases of exposure and partial sloughing, a portion of the pulp, included in the fang, presents a normal appearance, except slight fullness in the vessels. In many cases of this kind there is scarcely any soreness or pain, the alveolus being normal and the membrane also, especially in teeth with a single fang. In such cases, is there not an indication that nature is making a saving or conservative effort to retain a portion of such pulp from total annihilation? If so, is not an attempt on the part of the dentist to save not only the tooth but a portion of the pulp also in a healthy condition proper? How long such pulps may live or what per cent. ossify, we have no definite data to decide the point; but we do know that nature proportions her necessities to new conditions.

The writer comes now to consider carefully, and he trusts

describe plainly the varieties of pulp-irritation; the causes to which it is due; the symptoms by which it is distinguished: and the modes of treatment to which it is amenable. Dental pulps are irritated by external and internal irritants. J. Tomes thinks that even in as many as 99 cases out of the 100, disease of the pulp as a result of caries is dependent on the perforation of the pulp cavity. Irritation of the pulps of deciduous teeth interferes with the normal absorption of their roots; while irritation of permanent teeth as naturally interferes with the normal formation of their uncompleted roots. Pulps are usually irritated through the medium of external irritants by (1) infiltration of salt, sweet or sour condiments; (2) direct contact of foreign bodies; (3) presence of foreign material; (4) thermal irritation; (5) mechanical irritation; (6) medicinally; (7) prevention of exudation, by filling; (8) loss of tooth substance by attrition; (9) fracture of the tooth; (10) diseases of surrounding parts. These are the external causes from which trouble is liable to arise prior to capping or filling. The cases of frequent exposure or a condition equivalent to exposure are those in which the formative power of the pulp is lowest, the recuperative power least, the progress of decay most rapid, and the consistency of the carious material non-protective.

In considering cavities of decay in relation to pulp cavities, it is necessary to regard (1) situation of cavity of decay, (2) depth of cavity, (3) direction of cavity, (4) character of caries.

In addition to the varieties of pulp-irritation named, there are special cases to be mentioned and considered hereafter. These exceptional cases often occur where the salutary warning which an irritated pulp affords, may be followed rapidly by a disastrous series of symptoms imminently dangerous to the life of the tooth. In considering the different kinds of pulp-irritation it must be remembered that the symptoms to be enumerated as distinguishing each variety, will seldom be all present in any one instance.

There is no routine, strictly so to speak, in affairs of this kind. Every case has more or less its peculiarities; it may be of length of duration, it may be of magnitude, it may be of temperament, it may be of rapidity of progress; and each requires the exercise of educated judgment and practical knowledge. Individual cases alone are of no value, but the accumulation of individual cases leads to the adoption of a theory; and experience teaches that most cases very frequently present the symptoms of more than one variety, according to the influence of the causes to which they are due.

The frequency of pulp-irritation increases in communities as they advance in civilization. We therefore find, as might be expected, that those who chiefly benefit by this advancement, who are in fact the children of civilization, are most subject to diseases of the pulp. Indeed, among the primitive tribes of this country tooth-ache is almost unknown.

When there is extensive decay in a tooth, so that there is no very sound dentine at the bottom down to the pulp, either ossification of the pulp cavity under the decayed region; pulp nodulation, more or less extensive; or complete ossification of the crown portion of the pulp to an indefinite extent down; or death of the pulp, with or without much pain, takes place. The latter result may be attributed to various causes or circumstances, both local and general, depending in some instances on feeble neural resistance, resulting in stasis of circulation, inflammation and death of the pulp. Wedging teeth injudiciously, violent jarring from blows, biting hard substances, and all other causes that disturb the normal condition favor pulp-ossification.

The simple fact that every tooth untouched by disease is possessed of a living pulp, is the best evidence that it should be retained alive, if within the possibilities. We should, therefore, practice conservatism to a radical degree where the dental pulp is involved, for the reason that, after exhausting every resource to save it, it may be deadened and

removed as easily as if no effort to save the pulp had been made.

In treating these cases, the first care invariably is to ascertain as far as possible the precise pathological condition which is presented; whether the pulp is irritated, inflamed, ulcerating or gangrenous. The second point to be considered is the age of the patient; third, the treatment to be adopted; and fourth, the condition of the general health. The pulp may be to all intents and purposes regarding the involvement of its health and life "exposed," while yet there remains enough of original dentinal structure covering it to admit of the careful removal of all decalcified matter in the cavity, without actually coming in contact with it. If this is the case, or if there is actual exposure of recent date, with no great amount of tissue exposed, we may reasonably hope for success; but if, on the other hand, exposure has existed for some time, irritation is extensive and pain therefrom long continued, the suggestions named must be carefully considered.

The age of the patient, as has been stated, will have considerable weight as to the chance of success. In the child and youth, in case of recent exposure, there is reasonable hope of nature's protecting by an extra deposit of bone material, if assisted; while in advanced life, nature may or may not have power enough left to come to the rescue.

The temperament of the patient has of course its bearing upon the results to be attained; but success or failure does not depend entirely on the habits and temperament. It may as likely depend on the condition of the pulp itself at the time of capping, or, perhaps, the treatment given to it preparatory to capping. The very best temperamental attributes may be rendered almost valueless by an existing state of typhoid, for instance; and, on the contrary, pulps which rank low in the temperamental scale may respond most satisfactorily to treatment, when their possessors are in the enjoyment of excellent physical condition; so that physical condition must be recognized as exerting a most

decided influence over the result of every effort at conservation of the pulp. Sex does not seem to affect success in the treatment of pulps, the average of failure being about the same in both cases. It has also been found that the occupation and the surroundings which occupation entails, have a marked influence upon the success or failure of pulp conservation; as do also the mode of living, place of residence, and thermal and barometric changes.

Every intelligent practitioner will, therefore, readily comprehend that every thing which may possibly influence the final result of such operations, be it climate, temperament, or any thing else which may even in a remote degree become a factor of irritation, should be considered. It will also be necessarily inferred that a quantity of blood, deficient in vital energy or in its constituent properties, and which is, therefore, incapable of healthy coagulation, would thwart the best efforts: hence the various conditions of body must be studied in order to learn as far as may be the limit of possibility in any given case. The predisposing as well as the direct causes of disease must be entertained, and every circumstance carefully weighed according to a judgment well matured by close observation and practice.

Having decided that the pulp can be saved (and Dr. H. L. Sage says in the *Dental Register*: "It is not too much to affirm that at least nine-tenths of the exposed pulps which come into our hands can be protected and saved,") the question arises, How to treat it to that end?

The proper method of treating an exposed pulp (and by an exposed pulp we do not understand that the pulp is necessarily exposed to view,) has given rise to a vast amount of discussion and difference of opinion. While some gentlemen of acknowledged skill and professional ability claim that, after the pulp has become exposed, inflammation of the periosteum set up and even suppuration of a diseased portion of the pulp commenced, by excising the most diseased portion and using certain therapeutical remedies, such as application of astringents, escharotics and anodynes, fol-

lowed by filling with some non-conducting material, the diseased pulp can be restored to a healthy condition ; or by capping with gold, lead, tin, horn, oiled-silk, etc., that the vitality of the pulp can be preserved : other gentlemen of equal skill and ability, will invariably devitalize all dental pulps whether recently exposed and in a healthy condition, or when long exposed and in a congested, inflamed or partially dead state.

Now, here are two extremes advocated with an earnestness and zeal, by men of unquestionable veracity and acknowledged ability, and with such force that it seems difficult to come to any just conclusion as to the best method of treatment.

A pulp may not be entirely healthy when exposed by caries, yet there are instances where there seems to be nothing to show that it is in any way diseased. There is little doubt that by proper treatment at the hands of a skillful dentist, a large majority of exposed pulps may be restored to health, and then, if properly capped, the vitality of the tooth can be retained for life. For when a pulp is destroyed by oxy-chloride of zinc, for instance, its death is caused by the caustic effect of the capping at the time of its introduction or immediately following it ; and, if not destroyed then, is it any more liable to lose its vitality than a pulp which is not exposed ?

While it is not always, and under all circumstances, advisable to cap exposed pulps, yet when it is desirable, a large majority of teeth so conditioned may be treated and restored to health. How these results can be attained and what remedies are used, are the important questions which we propose to answer.

The operation of capping exposed pulps is by no means new or recent, for we find that Hippocrates is supposed to have borrowed from the Egyptians the practice of cauterizing the pulps of teeth and using cements. Then stimulants, such as alcohol and spirits of camphor, were used for the treatment of cases of exposure of the dental pulp. Later, a

gold tube was soldered to the cap so as to allow a discharge from the pulp to pass through the filling without injuring it. Next, collodion with morphia was used; and, after the first drop flowed over the pulp had set, the cavity was filled with asbestos saturated with collodion.

About 1851, Mr. Tomes advised a mat of gold where the opening is small; but, if much decomposed dentine exist around the opening, a piece of flexible quill, softened in warm water, should be laid over and the filling completed with amalgam. While Dr. Harris claimed that 11 out of every 12 could be saved by arching over the pulp with gold.

Other methods were suggested, such as lining the inside of the cap with gutta-percha, making a coil of gold wire into a spiral spring for the cap to sustain the filling, asbestos rolled in gold foil, ivory caps, horn, a plate with a hole in it so as to be put in place by an instrument inserted in the hole, excising a portion of the pulp and bringing the edges of the wound into close apposition (thus obtaining healing by first intention and slightly reducing the bulk of the pulp,) bleeding and covering the exposed pulp with oxy-chloride of zinc, creosote and oxide of zinc, dry oxide of zinc, non-irritant cements, cork, celluloid, parchment, gold-beater's skin, letter-paper saturated with carbolic acid for actual contact with the pulp, and oxy-chloride of zinc over this. In addition to the articles already named, there have been recommended for years, oiled-silk and a solution of gutta-percha in chloroform. Of the materials to be placed in immediate contact with the pulp are the additional ones of periosteum, cartilage, skin of boiled egg, (which is very soft and a non-conductor,) balsam of fir. Plaster of Paris is also endorsed because it is plastic, non-irritant, hardens slowly, giving time for careful and easy manipulation; is alkaline; porous after consolidation; and resists sufficiently for plastic fillings, such as oxy-chloride of zinc, gutta percha or amalgam.

Of the different materials yet used for capping, oxy-chloride of zinc, with its modifications, is claimed to be the

"panacea." It is most in favor for the purpose and offers the much larger proportion of results. It is sufficiently indestructible when protected from the secretions of the mouth. Its conductivity is low, thus preventing disturbance to the pulp by thermal changes. It is dense and hard enough to resist the necessary pressure to complete the operation of filling. It has requisite plasticity to be applied directly upon the denuded pulp, forming a close cap, without crowding upon it. When it can be used without giving pain, it is certainly preferable to any thing in use; not only for the reasons named but, being a good antiseptic, it prevents the pulp from spontaneous decomposition by coagulating the albumen.

Some eminent dental surgeons aver that the pulp is not saved by the process of capping, but is finally destroyed and taken up by the absorbents, and the canal is left vacant but causing no pain. Granting this to be so in some cases, if the tooth is retained in ease and usefulness, is not the practice commendable and the result attained?

The first step in the treatment of diseased pulps, or in fact any disease, should be to try and find the cause, and if practicable, remove it as a preliminary step; then the effect may in many instances subside without any further interference. If not, then if the pulp should be coated with creosote, carbolic acid or thymol, a coagulum may be formed sufficiently deep to leave healthy tissue below. Nature having been thus assisted to perform a cure, it but remains to guard the exposed point from liability to repetition of this trouble by placing a safeguard or capping over it and then properly filling the cavity.

When caries has well-nigh laid bare the pulp, it should not be disturbed, but, (after partially cleaning the cavity,) capped with a piece of lead, etc.; and the cavity filled with plaster, gutta-percha or other soft substance, which should be kept in good condition till the pulp is shielded by new dentine.

The remedies endorsed by Dr. J. Foster Flagg, for pulp-irritation are thus briefly expressed: (1) When the irritation

is caused by irritating and escharotic applications, judicious applications and proper protection are the remedies. (2) When caused by excavating; care and accurate knowledge of the pulp cavities are the precautions. (3) When caused by pressure in plugging; lateral pressure, the employment of plastic filling material or the interposition of a solid base is recommended. (4) When caused by conduction or other irritation after plugging; interposition of non-conducting or porous intermediate material is suggested.

Treatment for Pulp Exposed and probably Aching. Our first effort is to remove all decay and foreign matter from over and around the pulp without injuring the pulp itself: next, prepare a piece of spunk of suitable size, moistened with carbolic acid, tincture of aconite, or any good anodyne; and, after drying out the cavity carefully, place the spunk over the exposed pulp and seal up the cavity with cotton and sandarac, being cautious not to use too much cotton so as to cause a pressure on the pulp when the cotton swells. Spunk is preferred because it is elastic, yields to protrusion of ossific matter, and prevents contact with the more irritating and unyielding stopping. Let this remain in the tooth, one, two or three days as the case may be, directing the patient to call at the approach of pain. If by this means, an exposed pulp can be kept ten days or even a week without giving any pain, the case may be considered favorable for capping with oxy-chloride of zinc.

If exposure is slight and irritation limited, a thorough bath of pure creosote is generally all-sufficient before capping, yet even here it is safer to move slowly than to cap in haste. In the more complicated cases, careful treatment is of the greatest importance. In every case relief from pain and uneasiness should be secured before capping. To cap a pulp while diseased and irritated, means to destroy its life. The object of medicine is "to entertain" the disease while nature performs the cure. The remedies for this purpose are various and numerous; one proving most successful in the hands of one operator, and another in the hands of another.

But the treatment can not be confined to specifics, though many have appeared from time to time.

Treatment when Exposed by Excavator.—If a healthy pulp becomes uncovered and wounded, keep away irritating agents to prevent inflammation, and the pulp will soon heal by first intention, and deposit a sufficient amount of calciferous matter to fill the breach and thus protect itself. If the tooth is aching, apply carbolic acid to allay pain: then after mopping out excess, cover one side of a small cap of paper with a solution of balsam of fir (half drachm of balsam in four drachms of chloroform,) and place it over the wound. The chloroform quickly evaporates and leaves a smooth, glossy coating of soothing balsam which perfectly protects the pulp and holds the paper snugly in its position. Then use oxy-chloride of zinc and complete according to circumstances. But the surest way of saving exposed pulps of this kind is "not to expose them." Pulps not diseased should not be exposed.

Treatment for Granulating Pulp.—Suppose the pulp exposed, crimson in color, and even granulating into the carious cavity beyond its normal limits: clean away as much of the softening dentine as possible without inflicting pain; obtund the sensitive surface of the exposed pulp by applying carbolic acid; then lay directly on pulp a piece of card, first immersed in nitric acid. Remove the card in a few minutes, and neutralize the acid in the cavity with an alkali; after which cap the surface with thick paper moistened with carbolic acid, etc. Cover this with a coating of oxy-chloride of zinc, and when this has set, fill with foil, amalgam, etc., according to circumstances.

Treatment for Sloughing or Pus-Secreting Pulps.—As to sloughing or pus-secreting pulps few probably are in the habit of treating them with a view of saving and restoring to health the feeble remnant of pulp tissue. When pulps reach this stage, comparatively little is gained by conservative treatment or only in exceptional cases. Still there is treatment for them, and the following is offered: When

this condition has been ascertained, first cleanse the carious cavity, removing all trace of decay, and then syringe the suppurating surface of the pulp with carbolized warm water, which soon reveals to what extent the pulp has suffered. Next, cut down the surrounding walls of dentine, so as to be on a level with the surface of the pulp, thus securing the direct apposition of a temporary carbolic acid dressing. The suppurating surface having been changed to a healthy one, apply a bibulous layer securing a strict adaptation in contact with the blanched pulp, when the operation is completed by filling temporarily with os-artificial, or lining the cavity with this material and inserting a good amalgam filling; or, if a gold filling be contemplated, it is wiser to fill with os-artificial and defer the gold filling for a reasonable time. This treatment, with certain modifications according to the case, meets all cases of exposed dental pulps, be they healthy, inflamed or suppurating, when this organ has not become irreparably gangrenous or dwindled to dimensions of dead matter only to be met by extirpation and fang filling. It commends itself for: (1) Simplicity and painlessness; (2) Time saving; (3) A great general absence of supervening symptoms; (4) Its wide applicability to all cases of exposed vital dental pulp; and (5) Its *rationale* is sufficiently analagous to the surgical treatment of other lesions of the body.

Topical treatment stands first in the way of removing local irritants, and we have a right to count much upon the recuperative power of the pulp—that *vis medicatrix naturæ* which befriends in the treatment of other lesions of the body, from cuts, splinters under the skin, burns, etc. The peculiar diathesis of the patient may favor or retard the progress of healing, and in so far the local treatment may be seconded by judicious antiphlogistic remedies, aperients and astringent lotions. Constitutional depression of vital power or exhaustion after illness, simply points to the necessity for temporary local expedients; but the principle of the local treatment advocated must not be departed from.

In the methods of treatment of the dental pulp so far noticed, reference has been made to carbolic acid, creosote, styptic colloid, tannin and creosote, and other medicaments of this nature; but it appearing to many a strange way of restoring so delicate an organism as the dental pulp to health, by treating it with strong nitric acid, arsenic, etc., they had recourse to gelatinized phospho-carbonate of lime, which is capable of being rendered plastic for a short time, and hardening very quickly; and lacto-phospho-carbonate of lime. Their advantages are thus briefly expressed. Carbolic acid is not a constituent of dentine, neither is cork or gutta-percha. Nature may tolerate them under certain circumstances, but it is already a forced compliance. When the pulp is exposed it does not ask for any caustic agents, it is already too near destruction. What it does want is bone-material, food that may be converted into ossific matter. In soft, white dental caries, (and it is believed that the dental pulp is only exposed in this kind of caries, 95 per cent. of exposure being made by the excavator or caused by external violence,) if, instead of removing the demineralized dentine that still stands sentry over the pulp, the cavity be dressed with a paste of lacto-phosphate of lime, nature, after a week or more, provides a perfect capping. In using *gelatinized phospho-carbonate of lime* in pulps exposed for some time, mix with the compound, tannic acid and finish at one visit. First saturate with glycerine so that the air may be kept from the pulp while freely exposing it; after removing the decomposed parts, place this lime over the pulp, using pressure till pain is felt, and accelerate the hardening of the lime with absolute alcohol. When hard, treat as in ordinary cases and plug at once.

Pepsin has also been recommended for exposed pulps, and of its use, Mr. Oakley Coles says: "Being anxious to find an agent for the treatment of exposed pulps less dangerous in its character than arsenic, and at the same time less painful and fatal to the entire nerve, it occurred to me to try pepsin. Powdered pepsin is mixed into a paste with

hydrochloric acid. This paste is left in contact with the pulp and covered with wax for three days; upon removing it the cavity is well washed out with warm water, and swabbed with carbolic acid dissolved in glycerine. The pulp is then capped and the cavity temporarily filled for some months, after which it is filled permanently. The use of the acid is to increase the action of the pepsin, while the glycerine is added simply to preserve the compound in a condition of paste. Believing as I do, in the advantage of preserving the healthy action of a dental pulp, I have found pepsin an exceedingly valuable agent, since it acts only on that part of the pulp which is dead or in an advanced state of disintegration, (as the result of severe inflammation.) The fact that the pepsin paste produces no pain in digesting away the disorganized pulp tissue, is in most instances a still greater recommendation for its use."

When we are exceptionally baffled, and untoward symptoms succeed our efforts to save a pulp, we have an alternative, a valuable expedient in devitalization. Then we must remove all of the pulp that is possible, and "mummyize" by creosote and oxy-chloride of zinc, that all trouble from decomposition and putrefaction is reduced to the minimum. When uncontrollable pulp-irritation demands the devitalization of that organ it may be accomplished, it is said, without the patient experiencing any pain, by applying carbolic acid ten or fifteen minutes previous to the application of arsenical paste.

In conclusion, it is claimed that, although failures do occur in capping pulps, a greater percentage of cases is satisfactory both to the operator and patient when this method is pursued than when the pulps are destroyed and the nerve canals filled; that roots, curved a short distance from the apex, often present themselves that are impossible to fill well, and if not filled to the very end, there is a receptacle left for the retention of irritating matter that will scarcely ever fail to do duty in that direction; and that they are an offset to failures in capping exposed pulps.

We have not facts enough before us to predicate a per centum, but are not the facts already stated sufficient to justify the attempt to save such pulps alive in preference to any other course? And how any progressive dentist can follow exclusively the old method of extirpating pulps and filling canals is hard to comprehend, for really every thing seems to be in favor of making an attempt at capping and preserving these useful organs, although doubtless some pulps die quickly and painlessly after capping.

ARTICLE II.

From a Preliminary Lecture before the Class of the Baltimore College of Dental Surgery.

BY PROF. HODGKIN.

Gentlemen.—A little more than an hour ago, I was in a city more than forty miles away; and, hurrying along at more than as many miles an hour, I stand before you this evening to give the first lecture of the preliminary course. The fact that I hurry here on the wings or wheels of steam, suggests a theme which may not be unprofitable to think about and talk about for a little while. These are times of swiftness and dispatch. Hurried into the world, hurried through and out of the world, pressed and urged to the utmost tension of mind and body, with all the faculties on the stretch, the American is necessarily immature and unripe. This seems not to be so in other countries and among other nations, and it is not one of the least of our misfortunes that it is so with us. We lack finish, culture, precision, because of the lack of time to be thorough; and this has become constitutional and characteristic of us as a nation. But while this is all true, and while it is to our disadvantage, yet as we are here, and as this is the way all do, we must fall in with the current and, joining the common stream, hurry along to keep up with the eager crowd. You are here to study a profession, one to which hereafter the best

efforts of your lives are to be given, and to the acquirement of which the best energies of your brains and fingers are to be devoted. It should, indeed will, take many years to acquire proficiency in this your chosen calling, for proficiency is the child of experience. It ought to be so that several years of patient study could be bestowed here in the lecture room, and in the infirmary and laboratory, on these important themes; but as I have intimated, this is contrary to the genius of our American type of man, and we find that the profession of medicine, and its offshoot dentistry, are mastered, or supposed to be, by the average student in two courses of lectures. I need not tell you that superficiality must result. Still we must do the best we can, earnestly endeavoring to let no opportunity slip of grasping and holding the truths we hear and see.

The array of studies here presented, to a novice, is startling, bewildering and, indeed discouraging. Anatomy, physiology, chemistry, surgical and mechanical dentistry, etc., to be studied and mastered, in outline at least. And as this passes prospectively before you, you are apt to feel as I do, that two seasons are far too little for the attainment of even the outline of this curriculum. But with brave hearts and resolute purposes, and the use of the patient "plodding habit" which is more useful than talent—indeed it *is* a talent —we will accomplish much. There are some here now to whom the words may seem trite, because they have heard them before, but they cannot be too frequently repeated, (and I do it as much for my own application as for yours,) that the genius most to be desired and cultivated, most to be earnestly developed, is a "genius for *hard work*;" the power of steady, continuous application, the ability to not give up. Acquire this habit, united to honest purpose, and success is yours.

Now, I remember as a student, one of the most perplexing things to me was the great prolixity of both lectures and text books. It seemed to me that I should never be able to read all the books, much less master their contents,

and as for the lectures, to remember all that was said, seemed simply impossible. By day and by night I toiled, hoping to acquire in detail the works of Harris, Tomes, Gray, Dalton and others, and straining attention over lectures which seemed to be the sum of all knowledge, until utterly discouraged. After a while I learned this thing about studies: The book, the lecture, is a reflection only of the mind of the author, and in his mind are certain truths, facts, theories, he is picturing before his readers or hearers. He has his central idea, his principal theme, his fundamental proposition, and around that he groups his subordinate and correlated facts and arguments. Necessarily there is much outgrowth, important, but subordinate, related to the central fact, but dependent upon it; truths involved in truths. Take this away and the heart of the subject still remains; remove this and the auxiliary facts are irrelevant and useless. So I learned little by little, as years ago I puzzled over the things which now puzzle you, to attack the books and the talk of the lecturer somewhat after this fashion: What is the central fact here? What is this man driving at? What is the pivotal truth of this sentence or page? I learned that just as the farmer cannot grow wheat without also raising straw and chaff, so thought cannot be put down in words without at least something extraneous and subsidiary; not incidental, but necessary indeed to the growth and expression of the thought, just as the straw is necessary to the growth of the grain. Neither thought nor wheat can be produced without these processes, or vehicles, so to speak.

So now, in your studies here, if you can only train your minds to this course—to pounce down upon these precious grains of truth amid their surroundings and treasure them; if you can only learn to scan quickly the sentence and store the pith and marrow of it in your minds, you will have gained a great victory in the outstart. Most of you think you need good memories, and deplore what you call the treachery of that mental power. But I forewarn you that

what you need is not so much the powerful and ready memory which reproduces exactly the words of the thinker, the text of the recorder, as the power of swift and accurate generalization; the power of making an analysis of the *thought* of the study, rather than a recollection of its terms. And understand too (and I hope you will pardon me for opining that you are "green wood" in all things,) that words are only the clothes in which thoughts are dressed, and that ideas are expressed more fully and accurately and precisely by almost any other sign than words. We all realize this unconsciously when we see lectures demonstrated, and say: "I now see perfectly how it is, though I got an idea from the lecturer." This piece of work I hold in my hand, how beautiful, how perfect, how full of suggestion; yet it is silent. I had almost said words are the most lame of our methods of expression. Still we cannot dispense with them; and you will hear a great deal of talking this winter.

To return: we are here, anxious to learn, full of enthusiasm for our newly adopted profession, intensely engaged in the pursuit of knowledge. None of us, as students, feel fully equipped for the work, and most of us are lamentably deficient, not only in the habit of methodical study, but in the preliminary preparation which should preceed the study of a specialty. Only long and severe training will enable us to compel good habits of mind, and train the thoughts to be obedient servants. So then I advise not so much memorizing as the habit of deduction; not so much the acquirement of verbiage, as of the conclusions of the speaker or writer. And above all the acquirement of the *thinking faculty*. I had almost rather have you know something of your *own*, than to reply to my questions with re echoes of my voice, rather be made aware that you are *thinking for yourselves*, than recalling what I say. For the very thing you come here for, the "education," is only a "drawing out" of the mind, not a state of passive receptivity. You are not here that I may pour into you, as into a vessel, information, but to respond to thought with thought, to ideas with

ideas. And when I ask you questions from week to week, as I shall do this winter, you cannot please me so much as by showing me that you have ideas of your own: you cannot delight me more than by evidencing that you have used your brains.

This pressure which is upon us, as I have intimated, tends to make us superficial. We "skim" over a subject, get a "smattering" of it only, at least this is the tendency. But there is a difference between hurry and dispatch: we may put things through with energy and force, and still not hurry. Hurry is immature; dispatch is mature; the one completes nothing, the other is thorough. Dispatch is all attention, and is able to pass from one subject to another, and mass and concentrate all the energies of mind on what is before it with precision and at once. Indeed, if there be any one great distinguishing mark of a trained mind, it consists in this ability to be able to throw the whole energies on a subject, and at once to pass from that subject to another with facility and completely. But such power comes only by severe training.

And now with our winter's work all before us, you with as yet untried energies, but full of hope; we with what of knowledge and experience the years have brought us,—all with a resolute will that we will accomplish in the hours allowed us, all the work possible, and learn how to *think* as well as how to manipulate,—I think this course of lectures will be all that I desire, and all that you have a right to expect.

One word more: You have the right to think for yourselves, and what I have said so far will show you how pleased I shall be if you do think diligently and accurately; but if you will only take it for granted that the lecturer is the organ, so to speak, of the profession, and that he comes to you fresh from communion with the thinking minds of the age; that what he speaks is as near the truth as it is likely you or most men can get, it will save much trouble. Querulous criticism is useless, and to petulantly find fault

with the ennunciations of this or that lecturer because his utterances clash with preconceived teachings or ideas, is weakness, not strength, with you. Take it for granted that your lecturer knows his subject, fall in fully with him, and you will be saved much of worry, I may say unhappiness.

ARTICLE III.

Department of Micrology.—No. 1.

BY GEORGE B. HARRIMAN, D. D. S., M. D., BOSTON, MASS.

The industrious student in Micrology is always making advances in the sciences that he carefully investigates.

The old theory of the tubulous structure of dentine was advanced by Leuwenhock about two hundred years ago. Later investigations by Retsius, Harris and McQuillen and others, advanced the same theories or notions, unsubstantiated by facts, and it is a question in my mind whether or not they really investigated the subject carefully, or merely copied what Leuwenhock had written two hundred years before.

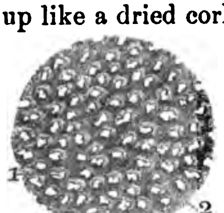
In 1868 I commenced the microscopical examinations of the teeth. The reader will find the results of some of my investigations in the May No. of the AMERICAN JOURNAL OF DENTAL SCIENCE, 1870. In that number I stated my process of preparing (page 3) in these words: "It may be interesting to the reader to be made acquainted with the process. These sections can be made of any desired size, and attenuated to any point from the one-two hundredth to the one-three thousandth of an inch in thickness. My process is to glue the tooth into a piece of wood, and fasten the wood in a lathe where there is a carriage which runs in a rack or pinion, with a tool post to guide the cutting instrument. In this way I obtain a section after my own desire." The process is exceedingly simple and easy, and consumes much less time than grinding down or sawing sections thin enough to be thoroughly and successfully ex-

amined with the microscope. By turning off a thin shaving with the lathe, I was able at least eleven years ago to show that the dentine was composed of cells and fibres of soft-solid substance, instead of being "tubes filled with a fluid."

The following cut shows how a thin shaving turned off by the above process looks when placed on a glass slide and magnified about five hundred diameters, and treated with acetic acid.

Figure 1 in the cut shows a mass of soft-solid substance, or an aggregation of cells with nuclei. No. 2 shows the cells closely joined together. No. 3 shows the lime salts, or interstitial substance.

I think Dr. Puffer, of Bridgewater, Mass., was present and witnessed the action of the acid upon the section, with me. We saw the lime salts dissolve and the cells and fibres swell up like a dried cork immersed in hot water.



Cut No. 2 represents a thin section of tooth treated with a strong solution of caustic potassa, disorganizing nearly all of the animal substance.

Figure 1 points to the vacant cavity where the soft, solid substance has been destroyed by the action of the caustic solution. No. 2 points to the lime salts which is somewhat blackened by the

action of the chemical, and is magnified about one thousand diameters. Much care should be taken in treating thin sections of dentine in this way. The investigator will find it much more difficult to treat successfully a section of dentine in this way, than by the former process. In this operation the dentine is liable to break and crumble, much to the annoyance of the experimenter, but perseverance will accomplish wonders.

The chemist tells us that the substance of the tooth is composed of one-third animal matter and two-thirds mineral substance. Where does the animal matter come from, if the so called "tubes" are not filled with animal matter?

ARTICLE IV.

Department of Micrology.—No. 2.

BY GEORGE B. HARRIMAN, D. D. S., M. D., BOSTON, MASS.

It is now about ten years since I first found nerve filaments within the soft-solid or fibrous portion of the dentine. In 1870 I wrote out what I found to be the facts, and they were published in the *Dental Cosmos*, January, 1871.

Further investigation in 1871 reaffirmed my examinations, and I published them in the *Dental Register*, October, 1872.

In that article, page 400, you will find there cut number 4. I did not state how it had been treated, only that it had been engraved from a photograph of my own taking. It was a thin section of a tooth ground down thin enough to be examined with a 1-50 objective, and treated with 4 per cent. solution of the chloride of gold. See cut number 1 this article.

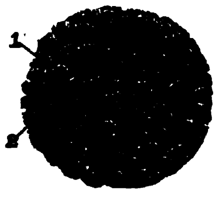


Figure 1 points to the soft solid substances, in the centre of which can be seen a small nerve filament. Figure 2 points to the lime salts.

In all of my examinations at that time I used the 1-50 of an inch objective, and

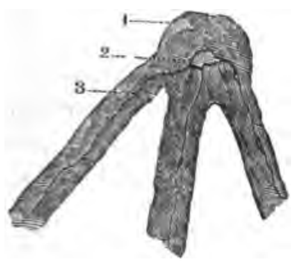
since then I have used the 1-75 inch objective; a glass that has been pronounced by the most scientific experts in microscopy as exceedingly wonderful in definition, and defining power to verify my observations. In 1872 I wrote as follows: "it is a well-known fact to histological observers that the medulla does not appear until afterwards;" that is, the gray substance of Schwan, when nerves become broader and more easily defined. It is not, hence, absolutely necessary for a constituent of a sensitive nerve to contain the medullary sheath.

The individuals who do not admit the existence of the axis cylinder, regard the white substance not only as the predominating constituent, but also as a really active element of the nerve contents. Prof. Cutter, of New Orleans Dental College, regards the whole of the soft, solid substances as nerve fibres. By making a chemical examination of the entire substance in the so called "tubuli," the result is a large amount of the medullary substance, and that there scarcely exists a tissue rich in cells where this substance does not occur in large quantity.

Still it is only in the nerve fibres that we observe the peculiarity of this substance as such, whilst in all other cellular elements it is contained in finely divided state in the interior of the cells, and is only let free as the contents undergo a change, and are subject to the action of chemical reagents. From blood cells, pus corpuscles, epithelium cells of the most versatile granular parts; from the interior of the spleen and similar organs, unprovided with excretory ducts, this substance can in every case be obtained by extraction. Hence, it is manifest that the medulla can not be the constituent in which reposes the function of the nerve, as such. This same conclusion is arrived at by physical investigations at the present time.

Therefore, the axis cylinder is very generally regarded as the *real, essential constituent of the nerves*, whilst in the white substance it can be only isolated separations of the investing medullary sheath. The *axis cylinder* would hence

seem to be the ***real electrical substance***, and we may certainly admit the hypothesis, that the medullary sheath rather serves as an isolating mass, which confines the electricity within the nerve itself, and allows its discharge at the non-medullated extremities of the fibres.



Cut No. 2 of this article was taken from a thin shaving turned off from a soft, sensitive molar tooth at the junction of the dentine and enamel, and the lime salts dissolved with mineral acid, and then treated with a solution of the chloride of gold, and is highly magnified. Figure 2 points to the cell ganglion and union of the three nerve axis cylinders, which probably run from the pulp.

Figure 3 points to one of the nerve filaments. It will be observed that the junction of the fibres is made at the enamel.

In a few instances with the use of the 1-50 objective and eye piece micrometer, I have been able to measure some of these nerve fibres, and I am sure that some of them do not measure more than (1-50,000) one-fifty thousandth of an inch in diameter, and it is my opinion that it is only the axis cylinder without the gray substance, that we find in the soft-solids of the dentine.

I now propose to say something in regard to the terminations of nerve fibres. I have given great attention to this subject, especially as they are observed in the fibres of the dentine.

There are several forms of termination given to nerves. Do they end in points terminating in the tissues or cells of the part? or do they end in loops? or are they plexuses? In the teeth we find the nerve fibres through the soft-solid substance towards the enamel and cementum, and in many instances they can be traced entering into its substance, and at their termination they draw together and unite by

anastomosis. I do not believe that they *terminate* by *free* extremity. This hypothesis confirms the position, that all nerve fibres form a complete circuit for the current of the nerve force, whether it be sensor or motor. My investigations of the nerves in the teeth go to show that they are continuous, or that you will find no nerve filament where the dentinal fibres do not anastomose.

This termination of nerve fibres in dentine, enamel, and cementum, this ganglion or cell termination of nerves in teeth, was never before demonstrated that I have seen. Have we not some cause for the excessive sensation in excavating teeth.

ARTICLE V.

Evils Arising from the Daily Use of Astringent Mouth-Washes.

BY J. N. FARRAR, M. D., BROOKLYN, N. Y.

That the *habitual and daily use* of astringent washes is mischevious, I think must be apparent to nearly every honest dentist who understands the effects of astringent medicines upon living animal tissues.

The object of a mouth-wash is to assist nature in restoring inflamed or congested gums to health, and give "tone" to the mucus membrane generally. The daily use of some washes will keep the gums in apparent health, but it is very questionable whether they should be used so frequently. All ordinary and useful washes contain astringents, and are more or less valuable in assisting in restoring to health diseased soft tissues, but when this is accomplished their use should be discontinued. When the system gets out of order, people sometimes take arsenic to aid in the restoration of the general health, but having done this they do not or should not continue to take arsenic regularly.

In the careful observation for several years of the effects of astringent mouth-washes upon the gums, it has been noticed that while some cases have improved, most of them

have been injured. The pleasant taste and sensation imparted to the mouth by their sweetened perfume is probably the principal cause of their popularity.

A manufacturer once said to me, innocently enough, "thousands of people have used my mouth-wash, and a large number come to me regularly for it, and say that they cannot get along without it. As soon as they are out of my mouth-wash *their gums become red and puffy*, and their oral secretions become *stringy and slimy*. My mouth-wash has become so popular that I have orders for it from all parts of the country. My customers write: Send me a dozen bottles or so; we cannot live without its daily use."

Stronger testimony to substantiate my views cannot often be given, for the reason that we have the truth given through the ignorance of the witness. One may eat opium regularly for a long time and feel compartively well, and believe the use thereof to be beneficial; but when the system has become habituated to these drugs and their use is discontinued abruptly, suffering ensues, and the condition of the system relaxes from its ordinary apparently healthy tone. In order to enjoy life after this habit has become established, *the victim is obliged to continue its daily use*; just so it is with astringent mouth-washes. They are very excellent, even indispensable, in curing diseased conditions of some mouths, but if continued daily for any considerable length of time after they have done their proper work, the condition of the mouth changes into a chronic abnormal state, sometimes called "second nature." The gums and mucus membrane call for them, and expect the stimulation which they give; *and their discontinuance may finally provoke a soft, congested, or other diseased condition of the gums and mouth.*

Astringents cause shrinkage of animal tissues, a necessary action to restore soft, spongy, inflamed, congested flesh to health, but the apparent effect of astringent mouth-washes upon healthy gums is to harden them unduly. They reduce mucus secretions below the normal and healthy quantity,

and produce a hard, dry aspect which is often so beautiful that it is apt to be mistaken for perfect health. Under such circumstances the degree of its use necessary for healthfulness is not always easy to know. While some gums and sockets will stand this abuse, others with less powers of vital resistance, and especially those which have a diathesis predisposing them to premature absorption, will conclusively prove the error of the treatment by hastening the absorption and contraction of the margins of the gums, and consequent *exposure of the necks and roots of the teeth.* Especially is this so where the *stiff brush* is used with it. The young and vigorous in growth and health will, however, often withstand the abusive use of astringent gum-washes for a long time before its evil consequences will become apparent.

This is a secret of their extensive sale. But, generally, the direful effects come sooner or later, of hardened gums and exposed roots, with no remedy, a condition worse than decay of the teeth.

Tartar will cause absorption of the gums by inflammation, but astringents act differently, and their long continued use causes the life to more or less shrink out of the tissues, producing artificial atrophy, probably from the deprivation or reduction of healthy action in the secreting cells, by keeping them in this medical splint so long that they lose in a measure the power of their normal functions. There is a law with all secreting tissues which leads to atrophy if their natural functions are suspended for any considerable length of time. It is my opinion that astringent gum and tooth-washes, so called, should never be used in healthy mouths, and this is the expressed opinion of all the celebrated dentists who have spoken upon the matter in the American Dental Association since its organization.

Some dentists think differently, and are always talking about mouth-washes to their patients, especially those who are in the trade. Mouth-washes should be made to meet the necessities of each case or disease for which they are prescribed; and they should be discontinued by degrees, or

gradually divested of their astringency when health is restored, for it should be borne in mind that the chief potency and value of any gum-wash are its astringent qualities. The honey, perfume, alcohol, water and soponacious ingredients, of which nearly all are largely composed, are of but little value above ordinary soap and water.

The safer plan is to discontinue the wash as soon as health is restored, just as in any given case we would discontinue any other medicine under such circumstances, and to use nothing but simple tooth powder made of precipitated or prepared chalk, pulverized cuttle fish bone, myrrh, and, perhaps, orris root, bicarbonate soda, and the like, which generally is all that is necessary to keep gums and teeth clean and in good condition after they are once restored to health, unless tartar collects too rapidly, when nothing but instruments will be effective. Although some washes are useful at proper times, I do not hesitate to say that most if not all, of the popular gum and tooth-washes sold in the shops and by some dentists are injurious in the long run, because they are recommended for daily use, whether the mouth be diseased or not.

Are they preservative? As to their tooth-saving qualities I can probably illustrate best by saying that the family of the manufacturer of the most extensively advertised tooth-wash in the world, advertised upon nearly every fence, rock, and newspaper throughout the length and breadth of the land, have recently come under my observation, and I believe that I have never seen poorer teeth than they have or presenting a greater degree of destruction from decay, though they have used this famous wash daily for years.

Diseased gums are almost always the result of neglect of cleanliness of the teeth, but such a condition may be, possibly, one of the symptoms of an affection of the nares, throat or stomach, or the result of careless medication, such as from mercurial poison.

Very seldom, do I find unhealthy mouths or gums, where a soft tooth-brush and a properly prepared tooth powder have been in daily use.

A harmless mouth-wash may be made, however, perfumed and not astringent, for imparting a pleasant taste and odor to the breath, which may be used daily. Such wash may be an inducement to oral cleanliness with indifferent people, when simple water and powder would be insufficient.

No toilet, however, is complete without a proper mouth-wash and tooth powder (unmixed.) The powder should be used every day, the astringent only when the gums or secretions are out of order. When in doubt as to what constitutes an abnormal condition of the mouth and gums, the wash may be used once or twice a week without doing harm, and will probably be beneficial *if* there be softness or redness of the gums or mucous membrane, with tendency to bleeding, or slimy, stringy saliva, or a general bad taste in the mouth.

All hybrid mixtures of liquids and powders made of such things as alcohol, water, tincture of catechu, honey and tooth powder, like all panacea medicines, are cheaply made to sell at a large profit. Complication in medicines, though formerly practiced, is now an old custom only continued by quacks. The right medicine in the right place may be a blessing, but if used out of place may be worse than a humbug.

ARTICLE VI.

Animal Grafting—Its Therapeutical Application to Certain Lesions of the Dental Apparatus.

BY DR. E. MAGITOT.

Read before the French Academy of Science, January 6, 1879, and translated for the *Missouri Dental Journal*, by F. Frizelle.

In a previous communication I presented to the Academy, in common with the regretted physiologist, Ch. Legros, cases of the grafting of dental follicles in certain species of mammals. To-day I will touch upon another problem—that of the grafting of adult dental organs, and this time the results favor experiments of a more practical nature.

Grafting, as practiced with the dental organs, is divided into several varieties. The first category comprehends the grafting of teeth taken from their own alveoli, and replaced either immediately or after an indefinite period of time. This is *grafting by restitution.* In a second group are placed those teeth which are taken from one alveolus and transplanted into another, either in the same subject or in a different one. This is *grafting by transposition* Finally, in a third category are placed cases of grafting teeth in different points of the body otherwise than the jaws. The experiments of Hunter, A. Cooper, Philipeaux, and others, are examples. This is *heteroptic grafting.*

In the present communication I will confine myself to presenting cases of grafting by restitution, but comprehending a particular variety ; that of raising an organ from its normal connections, removing by resection the diseased part, and restoring the remaining healthy portion to its primitive place. This is a combination of grafting and resection. [The first attempt of this kind was made by Dr. Delabarre, who having removed a tooth on account of abscess and fistula, excised a part of the root and replanted it with success.—Annals du Cercle Medical, 1820, 1re partie, p. 323.—The second was that of Prof. Alquie, of Montpellier, who in 1858 cured by the same operation a fistula in the chin, of long standing.—Bulletin de Therapeutique, 30 Mars, 1858.] My experiments run back only to 1875. The first three were published at that time (Gazette des Hopiteaux 1875, p. 35 et suiv.) Others figure in the inaugural Thesis of two of my pupils, Dr. Pietkiewicz (Theses de Paris, 1876) and Dr. David (Theses de Paris, 1877.) To-day the number of these operations attains the figure of 62.

The surgical indication of grafting combined with resection rests essentially on the diagnosis of a special lesion at the apical extremity of the teeth, characterized by *chronic periostitis* at this point: that is to say, inflammation of the periosteal membrane, denudation and necrosis of the subjacent cement, and resorption of the dentine—a kind of

mortification of the root. The morbid processes are manifested by the following series of accidents: Inflammation of the gum or the face, denudation, and necrosis of the alveolar border, mucous or cutaneous fistulæ, etc. These accidents sometimes take a chronic, sometimes an intermittent form, and if abandoned to themselves, may result in grave disorders, deformities and cicatrices of the face, and general affections which may endanger the life of the patient. The therapeutical remedy in case of a lesion thus defined, is the removal of the mortified apex of the root which is the inciting cause of inflammation. Now, this suppression not proving effective directly, it becomes necessary to remove the entire organ in order to effect externally the removal of the diseased portion. At this period the operation of grafting comes in, which causes the restoration of the remaining healthy portion to its primitive place.

The manipulative process comprehends three parts: 1st. Total ablation of a tooth on which chronic periostitis of the apex has been diagnosed. 2d. A surgical resection of the diseased portion. 3d. Immediate re-implantation. [Incidentally between the second and third operations, the surgeon can before grafting, perform other operations: washing out the purulent collection, ablation of sequestrum, and on the tooth even, resection of certain portions of the crown, obturation in case of caries, etc.] The rest of the operation consists in the sometimes necessary application of bandages (retaining appliances,) draining of purulent collections, the removal of necrosed alveolus, etc. But the last part of the operation is very simple. When the consolidation of the grafting is effectual, there is a slight local reaction, but little or no general phenomena; the fistulæ close, the collection dries up, and the complete consolidation is accomplished in a time varying from eight to fifteen days. When, on the contrary, the operation is unsuccessful, the grafted tooth drops out in a few days from suppuration.

The success I have had in this method of operation is shown by the following figures: 62 operations have been

performed, 57 cures effected—that is to say, an average of success of about 92 per cent. [Of cures dating from two years and a half back, those of the last two years especially, figure largely in our reports. The age of the subjects does not appear to exercise any influence on the results, and all kinds of teeth have been alike subjected to this process. In a large number of cases periostitis of the apex was not accompanied by any concomitant caries; in others co existent caries was removed before re-implanting the tooth.]

Conclusions.—1st. Chronic periostitis of the apex of the roots of teeth, complicated with neighboring lesions, inflammation, abscess, denudation, maxillary necrosis, fistulæ, simple or compound, hitherto treated by simple ablation, is not beyond the resources of conservative therapeutics.

2d. The treatment consists in the resection of the affected portion of the root after the temporary removal of the tooth, followed by its immediate re-implantation—or grafting by restitution.

3d. The result of the cure is the cessation of all disease, the firm adherence of the organ, the complete return of its vascular connections and the re-establishment of its usefulness.—*Missouri Dental Journal.*

ARTICLE VII.

Privilege Tax of Dentists in the Taxing District of Tennessee, the Phœnix of Old Memphis.

BY S. P. CUTLER, M. D., D. D. S., MEMPHIS, TENN.

Our wise men of fame sent up to Nashville to make laws for the people, passed the following law, together with other privilege laws:

"All Chiropodists, Veterinary Surgeons or Dentists, $10 per annum."

The above is the order in which the bill reads. Barbers, somehow, were overlooked. They should have been included, as they once pulled teeth, bled, cupped and leeched.

Doctors and other specialties of medicine, and lawyers are not taxed at all.

The category in which dentists are embraced, is certainly not very flattering to the pride of any accomplished dentist. Has it come to pass that dentists are to be classed with the other two professions by our wise men, our law givers? It is not presumed that a horse doctor or a corn trimmer is necessarily an educated man, though he may be such. I maintain that the tax is wrong and unjust in all the above named cases, more especially that of the dentists.

After the establishment of Dental Colleges and Associations all over the land, Journals filled with able scientific literature, to be ignored as professional men by our law makers is wrong, unjust, and contemptible in the extreme.

We are not as fortunate as any mechanic, as none of them are taxed. We are neither professional men nor mechanics in the eyes of the law. In the name of common sense what are we? Perhaps a middle man, perhaps something else; it is hard to tell what we are. We are taxed, notwithstanding, for the privilege of administering to the wants and sufferings of humanity, who seek relief daily and hourly at our hands.

ARTICLE VIII.

Dental Associations.

National Dental Association.

The Eleventh Annual Meeting of this Association, (late "Southern,") will be held in Augusta, Georgia, commencing on the 2nd Tuesday in July, 1879, at 10 A. M.

It is expected that the members of the Georgia, South Carolina and North Carolina State Dental Societies will be present, and a cordial invitation is extended to the profession generally.

Officers.

President.—Prof. F. J. S. Gorgas, Baltimore, Md.

1st Vice President.—Dr. L. D. Carpenter, Atlanta, Ga

2nd Vice President.—Dr. J. R. Walker, New Orleans, La
3rd Vice President.—Dr. John G. Wayt, Richmond, Va.
Cor Secretary.—Dr. A. C Ford, Atlanta, Ga.
Rec. Secretary.—Dr. E. S. Chisholm, Tuscaloosa, Ala.
Treasurer.—Dr. H. A. Lowrance, Athens, Ga.
Executive Committee.—Drs. W. C. Wardlaw, G. H. Winkler, of Augusta; G. W. H. Whitaker, Sandersville, Ga.

STANDING COMMITTEES.

Physiology and Surgery.—Drs. Jno. G. Angell, La.; R. B. Winder, Md.; Jas. F. Thompson, Va.

Dental Education.—Drs. W. W. H. Thackston, Va.; Jas. F. Knapp, La.; J. Taft, Ohio.

Histology and Microscopy.—Drs. S. P. Cutler, Tenn.; W. H. Atkinson, N. Y.; Chas. E. Kells, La.

Dental Chemistry.—Drs. L. G. Noel, Tenn.; R. Finley Hunt, D. C.; W. T. Arrington, Tenn.

Dental Therapeutics.—Dr. S. J. Cobb, Tenn.; G. F. S. Wright, S. C.; E. Floyd, N. C.

Operative Dentistry.—Drs. W. C. Wardlaw, Ga.; Jas. H. Harris, Md.; E. L. Hunter, N. C.

Mechanical Dentistry.—Drs. Jas. B. Hodgkin, D. C.; Judson B. Wood, Va.; H. M. Grant, Va.

Dental Literature.—Drs. J P. H. Brown, Ga.; J. B. Patrick, S. C.; J. Hall Moore, Va.

Voluntary Essays.—Drs. S. M. Prothro, Tenn.; Thos. T. Moore, S. C.; G. H. Chewning, Va.; Robt. Arthur, Md.; W. G. Redman, Ky.; E. S. Chisholm, Ala.; W. S. Brown, S. C.; Samuel Rambo, Ala.; Geo. H. Winkler, Ga.; J. G. McAuley, Ala.; W. H. Morgan, Tenn.

The members of the different Standing Committees are earnestly requested to be present, and present papers on the subjects designated. Proper arrangements will be made for reduction of Rail Road fares, &c., by the Executive Committee.

E. S. CHISHOLM,
Recording Secretary.

Joint Convention of New England Dental Societies.

A joint Convention of all the Dental Societies in New England, will be held in Wesleyan Hall, Bromfield Street, Boston, June 5th and 6th, 1879.

A large number of essays will be presented by able men of the profession in New England. A cordial invitation is extended to all interested to be present.

ALBION M. DUDLEY,
Secretary of Committee of Arrangements.

Georgia State Dental Society.

The Eleventh Annual Session of the Georgia State Dental Society, will be held in the city of Augusta, Ga., on Tuesday, the 8th of July next, at 10 o'clock A. M.

The State Board of Dental examiners meets at the same time and place.

L. D. CARPENTER,
Cor. Secretary.

EDITORIAL, ETC.

The Death of Josiah Bacon, Agent of the Rubber Company.

The following account is from the San Francisco *Chronicle*, of April 15, 1879, and shortly after its publication, Dr. Samuel B. Chalfant surrendered himself, and acknowledged that he had shot Mr. Bacon after a conversation between them, in which the latter had used some very insulting and irritating expressions.

We do not believe the murder was premeditated, but was the act of a sudden unfortunate impulse:

"The murder of Josiah Bacon, on Sunday morning, at the Baldwin Hotel, is one of the strangest on the criminal record of this city. A man, while preparing quietly in his room for church, hears a knock at his door, opens it, encounters a person who,

with scarcely a word shoots him, and he falls dead. The assassin walks out of the hotel. No one is disturbed. The occupants of the adjoining rooms are breakfasting below. Only one person on the floor above hears the shot, scarcely louder than an echo but thinks nothing of it. The dead man lies on the floor of his room, the door being ajar, all the forenoon, the life and bustle of the great building going on around him. The situation suggests that in Hawthorne's 'House of the Seven Gables,' where Judge Clifford sits in an arm-chair in his room of the old house all night amid strange sounds and ghostly sights. Some one passing during the forenoon sees him lying there, but thinks it may be intoxication and does not interfere.

The Chambermaid who comes about noon, is the first who discovers the truth. There is no external hemorrhage, and it is at first thought that the man has died of heart disease. The body is taken up and carried to the Morgue, and there the ghastly wound is found in the abdomen. The first theory is that of suicide, and it is but gradually that people begin to think a murder has been committed. The details may be given more fully as follows: Mr. Bacon has been for twelve or fifteen years the representative of the Goodyear Vulcanite Company so far as concerned their relations to the dentists. Every dentist has had to pay the company $35 per annum, or $50 if the amount was not forthcoming on a certain day. The sum was no great tax on those who had any work at all, though a heavy burden to the members of the profession who are just beginning business. Having the law on his side, and not being a man of the gentlest manners, he frequently made enemies needlessly. Sometimes dentists would pretend that they had no business to escape the tax, and sometimes they would refuse payment entirely, and a lawsuit would result. The Courts have always decided against the dentists, and all who could afford it, however, have slowly come to accept the situation, and have made the yearly payment promptly. Mr. Bacon has had more or less trouble with the San Francisco dentists, and some of them who felt most bitterly have threatened to kick him out of their offices. Some would not notice him when they saw him. About the time of Mr. Bacon's arrival in the city ten days ago, one of them of whom he demanded a royalty, told him he had done no work for a year. A day or

two afterward, being at a party, and the question of the Goodyear patent coming up, a lady told him she had some of his work in her mouth. He asked who made them, and she gave him the name of the dentist who had told him he had done no work for a year. Of course the agent vowed vengeance upon the recusant dentist. That he feared violence was evident from the fact that, being a small man, he took a stalwart companion with him wherever he feared trouble. His professional difficulties furnished the first clew to the police. The other traces of the crime were as follows: Last Thursday afternoon, a well-dressed and good looking man, who seemed to be 30 or 35 years of age came to the hotel, and after looking over the register, asked Mr. Marvin, the clerk, if Bacon was in. The reply was that he had gone to the country. On Friday evening he called again but Bacon had not returned. He asked for a personal description of him, which was given. It was about 9 o'clock when he came on Sunday morning. Bacon had been down, asked for his washing, which had not been sent home, and had gone to get shaved. The clerk thought that he had left the barber-shop and would be in his room. He so informed the stranger, who left the counter and walked toward the elevator. After that the visitor was not seen again. He seems to have knocked at the door, and Bacon, who had combed his hair and was adjusting his necktie preparatory to going to Dr. Stone's church, the Congregational Church in which he was brought up in Boston, turned and opened it. The bullet from the pistol, which was probably a Deringer, struck him below the navel, ranging downward. The autopsy is not finished, and it has not yet been found. He fell backwards, his head striking against the wall that divided his room from the corridor, and his feet toward the folding-doors, which opened into his bedroom. Some of his hair adhered to the wall.

The room is at the end of the hall of the third floor, and runs parallel with Powell Street. There is a window at the extreme end of the hall looking out on Ellis, and the door is the last on the left side. Nothing in the room was disturbed. Dr. Fox and family occupy the room on one side, and Mr. Gillan the room opposite, looking out on Ellis. They were all at breakfast. It was Dr. McAllister in the room who heard the faint report of

the pistol. The body was taken to the Morgue about 1 o'clock. The description of the man who had inquired for Bacon was given to the police, who at once began to work up the affair diligently, under the special direction of Captains Lees and Stone. It was surmised at once that the deed had been done by an aggrieved dentist. There were other theories that the deceased had met his death by the hands of an enraged husband or lover, but they were not heeded. Inquiry about the dentists' offices showed that all of them were at work as usual except one, Dr. Samuel P. Chalfant, of the New York Dental Gallery, No. 19 Sixth Street. He could nowhere be found. His assistant, Mr. Richards, said that Chalfant left his office at 10 o'clock Sunday morning, promising to be back soon and keep an appointment he had made with a friend. Since then he has not been seen. Richards waited in the office all day, and when he left he closed the door, which had a spring lock, expecting to find his employer there when he came in the morning, and having no key was obliged to enter by the window. Upon investigation, it appeared that Chalfant had had a great deal of difficulty with Bacon, as representative of the Vulcanite Company. His diploma showed that he graduated at the Philadelphia Dental College in 1871. He practised his profession in Philadelphia, Wilmington, Del., and St. Louis, and in each of these places contested a suit brought by the company and invariably lost it. It would appear from statements made to the police, that he never paid the judgment against him, but before it could be enforced, sought new fields of labor. He therefore came to this city about four years ago. Bacon's business took him to nearly every city in the country. He came here in due course of affairs, stopping first at the Palace and then at the Baldwin. Finding Chalfant still using the patent and still refusing to pay the royalty, he brought suit against him in Justice Sawyer's Court on the 11th inst. On the examination he was cross-questioned by Bacon in a manner that galled him bitterly. He regarded himself as being unjustly pursued by a vindictive man representing a grasping corporation, and he terribly resented a feeling, perhaps, encouraged by Bacon's manner. As he used to say privately, if God had given a man a set of teeth and he had lost them, he thought that a dentist had a right to put them in without asking

permission of, or making payment to anybody. The complainant in the case was represented by D. P. Belknap. The facts reluctantly extracted from him by the examination of B. Browr, were that he began practice at Wilmington, Del., in 1873. He remained there one year, and that he came from St. Louis to San Francisco. He had used the vulcanite all that time. In 1873 he made 150 plates for teeth ; in 1874, 200 ; in 1875, 200 ; 1876, 200; 1877, 200; 1878, 200, and so far in 1879 some 50 or 60. He also stated that he had been enjoined from using the material, and violated the injunction ; also, that Richards was not his partner. Examining his record previous to his professional life, the officers found that he had served during the war, having been Sergeant in Captain Samuel Cascadin's company D, Fifty-second Pennsylvania Volunteers, from 1861 to 1865, and that in the last year he joined the Veteran Corps.

Very thorough search was made by the police yesterday in every part of the city where it was thought Chalfant might be, but without the slightest trace of him. It was presumed that he had committed suicide, as his friends said he would never be taken alive. Every route out of the city was examined, including the Australian steamer which lay until midnight in the stream, but it did not appear that he had tried to flee the city. He is described by the police as a stout man, with black hair, dark brown mustache, very minute side whiskers, broad, square forehead, face broad and features regular, chin square and inclined to be double, nose slightly retrousse, and bright and sparkling eyes. His weight is about 160 pounds. He was dressed when last seen in a black business suit, round-topped hat, and gold watch and chain. He was highly esteemed by his friends as very companionable, warm in his nature and generous to a fault. His picture shows a firm and resolute character in every lineament. If he did the deed, it indicates dark, bitter, uncompromising qualities, of which his friends never dreamed. It seems strange that, if he planned the matter, he should have so publicly attempted its consummation ; that he should several times have gone to the office of the hotel to inquire for his man; that he should have asked his description ; that he should have shot him on Sunday morning, when everybody was in the hotel, instead of waylaying him outside. He

could not hope to escape detection, and probably did not intend to survive his victim.

Josiah Bacon, was a brother of School Director J. S. Bacon, and has also a cousin in this city who is a lawyer. He was a small man, probably not more than five feet six inches in hight and weighing less than 150 pounds. A certain dogged perseverance in his character, while it made him bitter enemies, fitted him for the business in which he was engaged. He was born in Boston, and came to this city unknown to his parents when but 18 years of age. A few years afterwards he married a San Franciseo lady, the wedding taking place at the house of his cousin. His home since returning to the East has been chiefly in Boston. His wife is at present residing in Bridgewater. Inquiry among the dentists does not show that the better class of them object strongly to paying the $35 royalty. Most of them have paid it promptly, and only the less prosperous have objected, although none of them specially liked Bacon."

Since the above was prepared, a letter from San Francisco informs us that we were correct in supposing that the act of Dr. Chalfant was not premeditated, but was the result of a sudden impulse instigated by threatening language on the part of Mr. Bacon. The dentists of California, sympathizing with their unfortunate colleague, are endeavoring to raise a sum of money sufficient to meet the expenses of a proper defence, and the profession of the country are earnestly requested to contribute. Dr. S. S. White, of Philadelphia, has been suggested as a proper person to whom such contributions can be sent. We trust the profession will respond, as the sum of twenty thousand dollars is required.

The paper republished from the *Missouri Dental Journal* in the last number of this Journal, on "Foul Breath," is of exceeding interest, and the more so because of the commonly avoided discussion of the topic. The dentist should aim to come to his patients with as little that is disagreeable about him as is possible. He is a badly tolerated infliction at best, but when standing before his patient with breath reeking with foul odors, he is simply disgusting. To him, however, who from unavoidable causes, as dyspepsia, &c., is burdened with a trouble of this sort which all his care will not eradicate, a few hints may be useful.

The seat of most foul breath, of constitutional origin, consumptives excepted, *is located at the base of the tongue.* Open the mouth, protrude the tongue, and note, in cases of offensive breath, the coating at the root of that organ: that coating is mainly the lodging place of the trouble. A stiff tooth brush, a little fine castile soap, and scrubbing, will bring about cleanliness the sufferer little hoped for. It is quite astonishing what great relief this simple act of cleaning will bring. If further help is required, a grain or two of crystallized carbolic acid in a glass of water as a gargle, will almost always remedy the evil for the time, for of course this relief is but temporary, and can only be eradicated by the removal of the primary cause.

Constipation not unfrequently causes foul breath. The sufferer is often not aware of this as a cause, yet it is one. The remedy of course is not purgatives, but *fruits and grains.*

A *candid mentor* is most useful in such cases. It is not in good taste to consult one's acqaintance on the subject. An evasive answer is almost invariably given; and then too the sufferer from this malady is, as a rule, unaware of its existence. Consult your wife, sister, mother, and do this frequently, not waiting for them to call your attention to the trouble, but invite criticism. The olfactories of women are more sensitive than those of men.

Chronic Catarrhal troubles and the resulting ozæna, are of so grave a nature as to call up the question whether he who has disease of so serious tendencies should practice a profession such as dentistry—a calling making heavy demands on the vitality. Open air occupation, persistently, patiently followed, should be the remedy in the main. It is a mistake that dentistry is a profession which delicate men may follow without harm; and a serious error that because one is consciously too feeble to follow an active out-of-doors occupation, that therefore dentistry may be pursued as easier. Many a life is thus lost. H.

Dr. Adolph Petermann, the author of the European work entitled the "Dental Almanac," a notice of which appears as a Bibliographical Notice in the present number of this Journal, deserves and should have all possible encouragement which the Dental Profession in this country can give him, for his successful efforts in checking the swindle perpetrated by certain parties

in the sale of Medical and Dental Diplomas from bogus institutions. The position which Dr. Petermann has taken on this question, and his untiring efforts to protect the communities throughout which these worthless documents have been distributed, have subjected him to the combined attacks, not only of the parties engaged in this nefarious business as principals, but also to those of the persons who have become the victims, or accomplices of the leaders of the movement. These attacks have also been directed against the old and respectable Dental Colleges of this country; and the parties making them are endeavoring to show, on the other hand, that the institutions they profess to represent (under high sounding names) are *bona-fide* establishments, Public and State Institutions, Universities, as understood in Germany, etc. In fact Dr. Petermann has almost made a martyr of himself. His efforts have never been properly appreciated, indeed, hardly known in this country. We trust that our dental journals will notice the commendable efforts of Dr. Petermann, so that the profession may properly appreciate his good work.

A Batch of Dentists.—The Commencements of the various Dental Colleges are over, and the published lists show 233 graduates as the result of the Winter's work. It is earnestly hoped that this large addition to the working force of the country will result in more and better dentistry, and the elevation of the tone of the profession. The Baltimore College turns out 41 graduates, with 82 matriculants; the Ohio College, 24, with 50 matriculants; the Pennsylvania College, 42, with 94 matriculants; the Philadelphia College 49, with 113 matriculants; the New York College 21, with 76 matriculants; the Missouri College 4; the Dental Department of the University of Pennsylvania 25, with 53 matriculants; the Royal College of Ontario 14, with 23 students in attendance.

Nine Colleges. Is it not too many? and cannot the example of Baltimore be taken to heart? Rivalry is a good thing, but there is a point where its value ceases. Fewer schools, the concentration of the energies of those at work in them and for them, and more selective care on the part of those who send students, (for mark it, gentlemen who take office students, the schools take what you send,) and improvement will result. There is need of this last all around. H.

The Annual Meeting of the Alumni of the Baltimore College of Dental Surgery, on the 6th of last month, was of the most pleasant character, and greatly enjoyed by all participating in it. There was more of heartiness in the reunion than is commonly seen; and the consolidation of the two colleges was the subject of many congratulatory remarks. The friends of both the old and the new institutions, cordially united, will throw the weight of their influence in the scale of the, comparatively speaking, venerable School, and the prediction is made that a new era of prosperity has begun. For the College in question, the editors of this Journal promise that the light of past experience will be allowed its full power of guidance for the future, and that the confidence reposed in the Faculty by the public in the past and present, will be, if faithful efforts will avail on our part, not unmerited. To our friends everywhere we say, send us carefully trained students, and select as your students, so far as you are able, men of culture. The future of dentistry lies largely in these last few lines. H.

A New Department.—The readers of the AMERICAN JOURNAL OF DENTAL SCIENCE will be interested and pleased to know that a new department is promised for the future—that of *Micrology*—edited by George B. Harriman, D. D. S., M. D., of Boston. The contributors promise to furnish from month to month, articles, well illustrated, on subjects germain to the profession; and it is confidently expected that the "new department" will be one of the most interesting features of the JOURNAL. Dr. E. Cutter, will work in conjunction with Dr. Harriman, and some new and interesting features of Microscopy may be expected.

H.

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Dr. Adolph Petermann's Dental Almanac, 1879. Published by John Alt, in Frankfort on the Main. For sale by all Dental Depots. Price $1.00.

This Almanac contains the names arranged in alphabetical order, and the addresses of more than six hundred dentists practicing in Germany, Austria and Hungary, with two steel engravings of Drs. D. Fricke, Sen., and the late Dr. F. Turnovsky (See Editorial.)

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ARTICLE I.

Treatment of the Dental Pulp.

BY ARTHUR M. RICE, D. D. S.

The high degree of vitality existing in the dental pulp makes it subject to a variety of morbid changes, which are the result of circumstances, such as various temperaments, constitutional health, an abnormal condition of the hard structure of the tooth, attrition, erosion, &c. Sometimes much irritation is present in females during gestation without apparent organic change in any portion of the tooth structures or pulp, and dyspepsia and other functional disorders frequently produce the same effects.

But the diseases of the pulp are chiefly attributable to the presence of caries in the teeth, therefore, the most careful attention should be paid to a thorough examination and treatment of them, in order to prevent exposure and irritation of the lining membrane and preserve as nearly as possible the normal condition of the tooth. When the decay has made but little progress this is comparatively an easy operation, but unfortunately in very many cases it has

progressed so far before being brought to our notice, that even to the most skillful the only course left open is to destroy sensibility by the entire destruction of the pulp, or, where there is a chance for success, to make use of the process termed capping.

In order to insure the best success in operations of this nature, one must be careful to consider the class to which a tooth belongs, the constitution, health and age of the patient, and the condition of the teeth and mouth.

Before describing the different methods of capping as a means of preserving the vitality of a tooth, it may be well to state a fact which is generally known to the profession, viz: a tooth may be decayed so nearly to the pulp, that the bone in direct contact with this part is in a softened condition, without causing an apparent inflammation or even great irritation of the pulp; and where a slight degree of irritation is present the amount of inflammation is not sufficient to cause pain. There may be considerable tenderness, and the pulp very near exposure, and still this organ be unaffected by disease. Now we know that in a large majority of cases after the human teeth have acquired their proper length, a deposition of bone from the pulp continues, and, in some cases, may eventually result in its entire obliteration. There are times when this deposition goes on more rapidly than at others, owing to various causes and conditions, (and the cases are by no means rare where decay threatens to expose the pulp,) and such a quantity is formed, as to arrest the further progress of the disease. This fact has no doubt been observed by all who have practiced any length of time, where a tooth having decayed to considerable extent, the decomposition seems to have been stopped in its course, and a healthy action been established, or at least there is no further breaking up of the parts, and the condition of the carious cavity remains, as it were, stationary. The reason why this action does not always take place can be explained by the fact that, in the majority of the caries progress so much

more rapidly than the deposition of bone, that as a consequence the pulp is uncovered and is no longer able to perform this function. So good reasons exist for believing that if the progress of the caries can be arrested before arriving at this last stage, after a time a dense and healthy covering will be supplied to the pulp.

Now this theory is generally admitted to be the correct one, and the best practice is, in *all* cases where there is a probability of success, to carefully remove as much of the devitalized bone as possible without disturbing that portion directly over the pulp, which will serve as a covering; the next step is to syringe the cavity out carefully, and dry it, then apply a little creosote on a pellet of cotton, allowing it to remain about two minutes, remove this and fill the cavity with some non-irritant substance that will harden the decomposed dentine; "lacto-phosphate of lime is recommended as the best material to use;" this is covered with oxychloride of zinc sufficient to fill the cavity, allowing this to remain two or three months; a portion of it can then be removed. In order to test the success of the operation, if on examination we find vitality in the dentine, it is safe to infer the pulp is performing its healthy function. If during this period there has been no pain or uneasiness of the tooth, in nine cases out of ten we can fill with a permanent filling and feel assured of success. I have often followed a like course, and after the removal of the temporary filling have found the devitalized bone very hard and firm, and have been able to introduce a permanent filling of gold without inconvenience to the patient. The safest plan is to leave a slight covering of a non-irritant material, and fill over this to prevent thermal changes. This proves conclusively that, under favorable circumstances, by pursuing this method we arrive at most satisfactory results. Of course this treatment cannot be recommended in *all* cases, for, in certain conditions of the mouth and teeth such a course would only be attended by absolute failure, and the death of the pulp would surely follow. Although we cannot

calculate with certainty the exact results of all operations of this kind, still a careful discrimination on the part of the operator will, in most cases, enable him to determine the proper method of treatment.

As a rule for all teeth belonging to class first, and in general those in which the devitalized bone is of a blackish or dark brown color and of rather hard consistency, the course of treatment described is attended by good results, but where the decay is of a soft, yielding nature and a light color, it is not advisable to attempt this course, especially if the tooth is one of much value.

We find some teeth that are almost worthless and of but little use to the patient, still he is loth to part with them and wishes them treated in some way. In these teeth we can try almost any experiment, as the result is not a matter of so much moment. After experience in all these matters, a practitioner's judgment will enable him to distinguish between those cases that would, in all probability prove a failure, and those upon which treatment would result in success.

After a series of experiments extending through many years, the conclusion reached by nearly all practitioners is, that a tooth can be preserved alive by the process termed capping, even after the lining membrane has become exposed. Now this has been performed in various ways, and it may be difficult to assert which method has been attended with the greatest degree of success, as each has had warm advocates who have claimed the best results. Of course each practitioner has his favorite method, and the diversity of opinion has led to investigations which have, without doubt been of great benefit to the profession generally.

One of the first methods practiced, consisted in carefully removing all the defective portion about the walls of the cavity and nicely fitting a gold cap over the pulp in such a manner that the edges should rest on the adjoining dentine so that there could be no injury to the pulp during the opera-

tion. It was necessary to exercise great care to prevent the displacement of the cap while introducing the filling, and many times this proved a very difficult matter. Under some circumstances this method might prove desirable and no doubt a few operators have met with success in its use, but owing to the nicety of the operation it has been superseded by others more practicable and less difficult.

A method very similar to this one is employed by a dentist of acknowledged ability and one regarded as a fine operator. This consists in fitting a piece of bone or ivory to the bottom of a cavity, and where it comes in contact with the pulp he makes the cap slightly concave in form so that there shall be no pressure on this organ, and then proceeds to fill the tooth. Of course the same care must be exercised as in the first instance to prevent any change in the position of the cap, and where there is great difficulty in doing this he has an assistant to hold it in position until it is secured in the process of packing the gold. There are some locations and conditions of a tooth where this method could not be employed, yet in a great many cases he claims success for it.

Another method successfully adopted in the treatment of exposed pulps by a dentist of considerable note, consists in covering it with a paste composed of plaster of Paris and the oil of cloves. In preparing the cavity he is careful to remove all particles of decomposed matter, and then to touch the exposed surface with creosote largely diluted before applying the paste; after this has become sufficiently hard the filling is introduced, and (according to his own statement) by following this course he is almost universally successful.

The most common method and one which is now almost wholly adopted by the profession is the use of some Oxychloride of Zinc preparation in all cases where capping is necessary. When these combined agents oxide and chlorine of zinc were first introduced as a material for capping, there were many cautious operators who gradually and

with great care adopted its use, feeling their way cautiously at each step, and they were slow to confess its merits or declare the result of their experiments, only trying it in the most favorable cases. On the other hand many unskillful and careless ones at once employed it in *all* cases, even where grave doubts existed as to success, and as a consequence in a great many instances it was effectual in bringing about the very results that they were seeking to avoid. It was the custom to apply it directly to the pulp in its full strength, and the strong escharotic property of the chloride made itself manifest, first by the extreme pain produced, and after a time by the complete destruction of the pulp; but by carefully observing the results of repeated experiments we have learned how to avoid this mistake.

To use oxychloride of zinc successfully considerable care must be exercised. The material should be pure and properly prepared. The oxide of zinc is often impure, containing white lead, chalk, and other substances, and the yellowish white color is regarded as indicating the best quality. The chloride should not be used in its full strength, as far better results are assured with a diluted solution only sufficiently strong to cause the mixture to set. This can be diluted by adding a little water, or what is better a little chloroform, the anodyne effects of which will have a tendency to allay the pain produced by the chloride.

In the case of partially exposed pulps and where there is a degree of irritation present, the first step would be to remove all extraneous matter, then apply the rubber dam and dry carefully, and if any portion of the soft devitalized part remained, remove this with round edged excavators, then an alkaline solution, as bicarbonate of soda, can be applied which will leave a tendency to relieve any pain that may be present. A solution of gutta-percha in chloroform is now placed over the bottom of the cavity, and after the chloroform has evaporated, the oxychloride is used to cover this or to fill the cavity temporarily.

In cases of wholly exposed pulps where there is no

inflammation present, and also where they are exposed during the process of preparing a cavity, as they often are, slight hemorrhage follows, but this usually comes from the veins which are superficial, and but little difficulty attends the preservation of the pulp, but where the arteries are wounded the case becomes more complicated and success does not so easily follow our treatment. By the aid of a magnifying glass, we are enabled to distinguish the exposure of an artery by its pulsations. Now the dental pulp is subject to the same conditions as other soft tissues to a certain extent, and our diagnosis should be a careful one in order to ascertain with accuracy just how far it is involved in disease, and it is a very important point to determine the difference between normal and abnormal conditions. The pulp in a normal state is not very sensitive, and we often come upon the cornua of this organ, which extends into the cavity of a tooth without causing much pain; but where inflammation is present, a breath of air even will cause the patient to start and show signs of suffering.

In the case of simple exposure and slight hemorrhage attending it, we must wipe the cavity out and stop the blood; this can be done by using tinc. of calendula or spirits of camphor. After we have accomplished this, the part is then touched with glycerine, as a soothing agent. We now proceed to apply our collodion, or gutta-percha in chloroform, which is covered with oxychloride as in the preceding cases; after this has become sufficiently hard the surplus can be removed, and a gold filling introduced. Of course it would be better in *all* cases to wait a few months before filling permanently, although many operators are in the habit of finishing the operation at one sitting. Now the advantages of waiting are these—we cannot always be sure of good results, especially where there has been some irritation of the lining membrane and pain in the tooth, and by this precaution some trouble to ourselves and annoyance to our patients may be saved; another advantage is that as the temporary filling wears out we can test the

success of the operation by cutting a portion of the dentine; if this retains its vitality, we are assured that the pulp is in a normal condition. This deposition of secondary dentine goes on so slowly in the majority of cases, that a year or more will be necessary to the building up of a new covering to the pulp. Of course this depends somewhat on the health of the patient, the condition of the blood, &c. Sometimes we know that slight inflammation may exist soon after capping, which passes away and no further uneasiness is felt, but experience shows cases like these to be exceptions, and consequently, we must endeavor to prevent irritation that may lead to inflammation of the membrane.

[TO BE CONTINUED.]

ARTICLE II.

The Origin, Progress and Present Condition of Dental Science.

BY GEO. H. CHEWNING, D. D. S.

From an Essay read before the Virginia State Dental Association.

The Dental Art has generally been considered of modern date; it is however of a much more ancient origin than is usually supposed.

In Egypt we have the first mention of the dental art as a distinct branch of the medical profession.

It is stated by Herodotus, the Grecian historian, that the art of medicine is so practised in Egypt that there is found an individual healer for each individual disease. Hence the whole country was filled with healers, some to take charge of disorders of eyes, others of the head, others of those of the teeth, and others of secret disease, &c.

Now as these several branches were hereditary, it might have been presumed that the professors of them would in process of time attain great perfection each in his own branch, and accordingly the skill of the medical men of Egypt was long the wonder and admiration of the world,

and the monarchs of Persia and other countries, for many ages, employed Egyptians alone as their physicians and surgeons, till the surgery of the Greek School at length surplanted them.

During the time of Hippocrates, the first good observer, and the first practical physician whom the world knew, and who furnishes in philosophy one of the first examples of that analytical method of cultivating science, which is commonly considered proper to modern times, and of which ancient times furnish but few instances, one of his practices in pursuit of study of anatomy was to visit frequently the burial grounds of the cities in which he resided, and his description, therefore, of bones and teeth are not only the best which had hitherto appeared, but the best part of his anatomical writings. He describes in various parts of his work as well the functions and periods of appearance of the several teeth, as their principle diseases, and plan of treating them both by manual operations and by dentifrices

In Celsus we meet for the first time, anything like explicit directions in regard to extraction of teeth. Such as the necessity of severing the tooth from the alveolar process before attempting to remove it, also the description of the frames of the instruments; how scarifying the gums, and of stopping carious teeth with lead and other substances, though the latter practice seems to have been more to prevent their breaking during the operation of extracting.

One of the forceps described like the bill of the parrott —very much like the hawk's bill forceps, of the present day.

From the poet Martial, who flourished about that time, we find the first mention of *false teeth* made of bone or ivory, and mentioned more specially the Roman Ladies, as resorting to that means, to increase their personal attractions.

We now come to an era in the history of medicine, which ranks next to that of Hippocrates. I mean the era of

"Claudius Galen." About the time of his appearance, the profession was split into all kinds of sects, the Methodic, Pneumatic, Empiric and many others, but Galen appeared and all hid their diminutive heads, like the stars at the rising of the sun. He was born at Pergarnus, about 130 years after the Christian era, and studied philosophy and medicine successively at Smyrna, Corinth and Alexandria. At the age of 34 he settled in Rome, and remained there with only temporary visits to other places till his death. Galen was obviously a man of wonderful acuteness and industry, and left behind him many medical writings.

His description of the practice of extracting teeth, and dentifrices and washes, were about the same as others that preceded him.

For some centuries after the time of Galen the progress of medical science retrograded the decline and division of the Roman Empire, which happened about 400 years after Christ, having entailed upon science and literature, such discouragement as was incompatible with their successful cultivations. Towards the middle of the seventh century the few remains of learning that were left, were almost extinguished by the barbarous and bigotted Saracens, who in 640 made themselves masters of Alexandria, which had contained for nearly a thousand years the greatest school for learning, together with the most valnable library in the world at that time. This the savage disciples of the ignorant Mahomet entirely destroyed, assigning as their reason, "that if the books contained only what was in the Koran, they were useless, and if more they were pernicious." We may form some idea of the extent of their destruction, when we learn that the books so condemned were sufficient to furnish with fuel for more than six months, no fewer than four thousand hot baths.

The Saracens, however, were not designed to continue savages, for even their Califs were soon made sensible of the advantage of science and learning, and began 100 years after the destruction of the Alexandria library to give

large premiums for the translation into Syrica and Arabic, of such Greek writers as they could procure.

About the eleventh century we find from the works of Albucasis, the prince of Surgeons, a much more general description of Dentistry. First the extraction, then the material for filling, and how it should be introduced, with a description of the file; also describing no less than twelve instruments for cleansing the teeth of Saliva Calculus.

He was acquainted also with the use of false teeth, describing them as made of bone, &c., and being retained in their places by gold wire as were loosened or transplanted natural teeth.

The first time we meet with the appellation of Surgeon Dentist was to Gillies, in 1622, in France, to undergo a regular examination, and it is from this period perhaps, that we may date the establishment of the dental art, as a distinct branch of the medical practice.

In the latter part of the sixteenth century, but more particularly in the beginning of the seventeenth century began to assume a different and more interesting aspect, so much so at least as to have engaged the attention of many eminent writers and naturalists, and particularly some whose pursuits have been directed to the treatment of the diseases of the mouth and teeth. Among these were Laudemey, of Paris, who from the knowledge he had acquired and the celebrity he enjoyed, was sent for to the Court of Spain, in the year 1716, to perform an operation upon the mouth of Philip, then Sovereign of the Kingdom. We are not aware of his ever writing anything upon the subject of his profession, but we find that in 1723 he was acting in the capacity of Dental Surgeon to his catholic majesty Philip, King of Spain.

At that period we also find that Fauchard, a Dental Surgeon, of Paris, was engaged in writing a work on the subject, and which was published in 1728 in two volumes, and in which was made the first attempt to systemize and treat methodically the dental art as a distinct and separate

branch of the Medical Science; hence he has ever since been considered, and justly styled the Father of Dentistry.

He was one of the first to offer any satisfactory directions for obviating defects in the palate, and gives plates of five kinds of obturators for that purpose.

From the year 1728 to the year 1806, not less than 7 or 8 dental works appeared. About the time that Berdmore wrote his practical treatise, (which was in the year 1770,) Mr. Hunter was engaged in his work, on the Natural History of the Teeth. From that period to 1798, the year in which Mr. Blake wrote, no other work appeared that we know of. Mr. Fox contributed his share of that kind of knowledge, so essentially important and necessary to assist those who were practically engaged in operations so intimately connected with the health and comfort of thousands.

And last, though by no means least in importance, the work published by Mr. Thomas Bell, which well fulfilled the purpose he designed, I doubt not at that time, was equal to any that had been written on Dental Surgery in the world.

Having thus given a brief sketch of the origin of Dentistry in the old world, will now try and direct your attention to the new world.

The first opportunity offered to any in America to obtain a knowledge of the profession was through a friend, dentist by the name of Lee Marie, who offered his services to the public, during the revolutionary war. He had probably acquired a knowledge of the profession in his own country, where it had long been cultivated, and not without some pretentions to skill in practical operations, especially in the transplanting of teeth from the mouth of one person to that of another, which he frequently performed. He likewise undertook to instruct some three or four in the profession. About the same time we have mention of two gentlemen who had probably acquired the knowledge of their profession in England,—Whitelock and Hoofindale.

Mr. John Greenwood was the first Native American Dentist, and was endowed with no ordinary share of ingenuity and mechanical tact. He commenced his professional course in the city of New York, about the year 1789 or 90, at the latter part of which period we believe he stood alone in his profession, enjoying almost the exclusive patronage and confidence, not only of the inhabitants of that city, but of the father of his Country, George Washington himself, for whom he made an entire set of teeth, (which was on exhibition at the Centennial, and doubtless examined and admired by many of our fraternity,) and is now in the museum of the Baltimore College.

From the time of Greenwood, the advances of valuable improvements in practical dental operations were onward and rapid, and that too by unlooked for and valuable auxiliaries. For about this time the importance and respectability of the profession was considerably enhanced by the auspices of the well known talent and ability of the elder Mr. Gardet, who having obtained a valuable fund of professional knowledge before leaving his native country, France, came and settled in Philadelphia, where he soon received the most flattering encouragement for his services.

About the same time the profession experienced another no less valuable or important accession in professional skill and talent, in the arrival of Dr. Edward Hudson, from Dublin, who likewise prefered Philadelphia for his future home, and there practiced for many years.

Thus while the profession was dispensing its benefits and usefulness to the Northward and Eastward, through the diligent and successful practice of Messrs. Greenwood and Woofendale and some few others, the profession was advancing with rapid strides to usefulness and respectability, by the skill and ingenuity of Messrs. Gardet and Hudson, of Philadelphia, who were dispensing the benefits and examples of their superior skill and professional talent to the West and South, where they were at all times considered as worthy of imitation, and ever sought after with that view.

History of American Dentistry says of Dr. Hayden. Horace H. Hayden was born the 13th of October, 1768: and at the age of fourteen went to sea as a cabin boy, voyaging to the "West Indies;" two years later, being thrown upon his own resources by the poverty of his parents he became apprenticed to an architect; which business he followed until his 24th year, when being in New York, and having occasion for the professional aid of a dentist, he visited Mr. Greenwood, and while under his treatment, determined to become a dentist, and procuring the few dental books that were then accessible, and not apprehending any deficiency in mechanical skill, he directed his course Southward in quest of a location, (Harris, D. D.,) and arrived in Baltimore in 1804, where he determined to remain. Dr. Hayden conceived the idea that the dental profession was capable of a much higher standard of scientific attainment; accordingly he began the study of general medicine, while continuing to operate as a dentist, and with such effect, that later in his life he received honorary degrees from the University of Maryland, and the Jefferson College of Philadelphia. In 1839 he was one of the petitioners to the Legislature of Maryland, to establish a Dental College, the Faculty to consist of Dental and Medical practitioners. After the establishment of the Institution, he at the age of seventy assumed the duties of its chair of Dental Physiology and Pathology. Dr. Hayden was also one of the founders of the American Society of Dental Surgeons, and was in 1840 elected the first President, which office he held to the time of his death, January 26th, 1844.

Dr. Thomas E. Bond, was also a member of the Faculty of the Baltimore College, from the time of its foundation till his death, which occurred a few years since. He was the author of "Dental Medicine," which is one of the textbooks of the College. THE AMERICAN JOURNAL OF DENTAL SCIENCE, in speaking of this work says—The work of Professor Bond opens a new era in the history of Dental Surgery, pointing out as it does the pathological relationship

between diseased teeth and other parts of the body. "It demonstrates in the fullest and most conclusive manner, the importance and absolute necessity of a thorough knowledge of Anatomy, Physiology, Pathology and Therapeutics, to the dentist." He also contributed largely to the literature of the day, and in conclusion, he was a great, a *good* man.

Professor Baxley held the chair of special Anatomy and Physiology for one course, resigning about three weeks previous to the beginning of the second session. "Professor Baxley as a lecturer and teacher of Anatomy ranked among the first in the country. His resignation did not proceed from any want of interest or confidence in the success of the College, but from the imperative demands upon his time, resulting from arduous professional duties."

Professor Chapin A. Harris was the founder of the Baltimore College of Dental Surgery. He was the first to consult with Prof. Hayden, in regard to establishing a college. He wrote the first "Practical Treatise on Dental Surgery," in 1837. Dr. Arthur says of this book: This is the first edition of a work which is now so well known, that any abstract of its contents would be a work of supererogation." It was the first entirely original work published in the country, for the use of the profession exclusively, and still in (1851) stands alone." In 1845 a second edition, very much enlarged and thoroughly revised, appeared under the title of "The Principles and Practice of Dental Surgery." Dr. Arthur also says of it: The book in this form was generally acknowledged to be the *best* practical treatise on Dental Surgery that had ever appeared in any language. This work having been revised by Profs. Austen and Gorgas, has since 1840 retained its place as a text book in most of the Dental Colleges.

In 1849 his Dental Dictionary appeared, since twice revised and enlarged by Prof. Gorgas, and not only are all Medical and Surgical terms explained with clearness, but we have also a collection of valuable knowledge that

at that time could not be found any where else. Prof. Harris opened many new sources of Dental Science, and by his ability, by his judgment, and by his practice, enlarged the bounds of his art, and gave stability to his precepts, to which no one of us can have recourse without feeling personal obligation and unfeigned servience. He was a man of long and extensive experience, of originality of thought, talent, and genius, and under such impressions would I consider every memorial of his indefatigable mind, and every result of his curious and important investigations. He has and will forever have a bright and honored name in the profession of his choice. He was the head and corner-stone of the Baltimore College of Dental Surgery, and felt great anxiety and responsibility for its success while living, and his last aspirations probably were that those principles might be adopted and carried out which would perpetuate it.

Until the Baltimore College of Dental Surgery was established in 1839, no institute existed expressly for the purpose of giving instruction in Dentistry; up to that time instruction was exclusively confined to private tuition. For some time the scheme of establishing a College expressly for this purpose was regarded by the community as by many of the profession, as a difficult and doubtful undertaking, but thanks to the untiring exertions of its enterprising founder Chapin A. Harris, the enlightened policy of the State legislature, and to the cheering countenance and liberal support of the citizens of Baltimore, the experiment has been fully and successfully tried; the practicability and the great public utility of such an organization has been fully proven.

More than 800 students have received Diplomas from that institution; and there are but few if any of the Colleges that some of their faculty will not be found to be graduates of this College—also many of the Court dentists in foreign countries.

Where can there be found an Institute that has sent out

better men or more skillful practitioners than the Baltimore College of Dental Surgery?

Let us glance at a few—Harris and his works, Bond, Arthur, Austin, Gorgas, Parmley and Hodgkin and a host of others celebrated for their writings, and some for their inventions. As time fails us however, we will only mention Dr. B. M. Wilkerson, as one of the inventors, who invented the "Wilkerson Chair" and Fountain Spittoon which you have all had or will have the pleasure of examining.

In 1845 the Ohio College was chartered, most of the faculty being graduates of the Baltimore College.

We have now in existence thirteen Colleges, and as nearly as we can learn over 2300 persons have received the degree of Doctor of Dental Surgery.

In 1840 the first Society was formed in the city of New York, called the "American Society of Dental Surgeons."

The next organization of the kind was the Virginia Society, the *first State* Society that was formed. It was organized the 12th of December, 1842, in Richmond. It was the first incorporated Dental Society in the world. Since that time we have had over 90 Associations, and at this present time they will average one for each State in the Union.

I should liked to have called your attention to the several discoveries made by dentists, such as Sulph. Ether, the application of Nitrous Oxide and many others, but time again fails me.

ARTICLE III.

False Diplomas.

Translated from Dr. A. Petermann's "Dental Almanac," by
A. M. I. Hein, D. D. S.

In the first and second editions of the "Zahnarztlichen Almanach," I have given without respect to persons—for my combat only concerns the thing, never the person—several infallible proofs of the disreputable trade that was practised with the so-called American Dental Diplomas.

The evil continued to spread so rapidly amongst the dentists and quacks, (Kurpfuscher) that it was high time to stop the deceitful nuisance. Though it was known for years, that those purchasable diplomas were counterfeited, and not allowed by the law, the trade grew from year to year to larger dimension; the more so, because the possessors of those bought diplomas were not punished. The German Government did not know the magnitude of the infamous business.

The fact is, that besides barbers, surgeons, mechanics and others, dentists also adorn themselves with these fraudulent diplomas—and by no means to the honor of our profession.

Among those dentists are several having an esteemed position in society, and unfortunately they are members of the Central Association of German dentists, though they only can do harm to the reputation of the society.

For the dentists, the Diploma swindle is much more objectionable than in the case of the quacks, as the latter are without reputation, more or less on the ground of fraud and deceit.

To handle such improprieties and frauds among the dentists with velvet gloves, would only support the swindle. On the contrary, one ought to oppose with all possible means, such fraudulent pretentions, in order that the evil does not rise to gigantic dimensions.

Only by such means can we give to the dental profession, the respect it deserves, and not by distorting or concealing the whole truth.

The majority of the defrauders and those being cheated by false diplomas, have been quiet in real acknowledgement of their position, since the exposure in the first two editions of the Zahnarztlichen Almanach. It is so much more astonishing, when one of the Pseudo Doctors,—who has for years past, and until recently deceived his fellow-creatures, by using his bought and falsified Doctor———, title———, as he could know sufficiently, through German

and foreign professional papers, that American Universities and Colleges, on account of their charters, could never confer a degree on persons *in absentia.* At last he sets himself on the high horse, and with clever distortion of the facts, allows himself, as if he was in full right, as Mr. Adolf Witzel, dentist in Essen an der Ruhr did, in the Oct. number, 1878 of the Deutschen [Vierteljahrsshrift] fur "Zahnheilkunde."

After I made it impossible by my exposures for this gentleman to use his bought Doctor title, he comes to the conclusion that he would have returned to the truth without my proceedings in stigmatizing the swindle.

It really shows great impudence if such people—who, themselves, dealt in bought and falsified Diplomas—as is the case with Mr. Adolf Witzel,—to write long discussions on Kurpfuscherei, mania for titles and means for the elevation of the honor of the dental profession.

It is not a true devotion for the science, nor interest for elevating the honor of the dental profession, that shuts their eyes against the rudest improprieties; personal respect, and exalted appreciation for the good of others should dictate a different course.

Such a ridiculous demand as Mr. Witzel makes reacts on himself. In the same discussion from what Mr. Witzel says, we find that he received such a Doctor's Diploma as he got, *in absentia,* but he makes it appear perfectly legal.

On the part of the German Reichs Kanzler, they have received through the Imperial Embassy in Washington, the terms for graduation of all the American Universities.

Alluding to the reports, now officially propagated, no American University has the privilege of giving any degree "*in absentia,*" etc. And if no University has the right to confer a degree "*in absentia,*" then this Doctor title of Mr. Witzel which he received "*in absentia,*" can not be legal, —his diploma is simply falsified and was purchased.

The Logic a 'la Witzel may be understood by those who can do so. Or does Mr. Witzel mean by legal that he paid for his Doctor's title?

If the discourse here is about doubtful American Universities, I need not say, that those who by honest work and true study "*in presentia*" in one of the reputable dental colleges, received the degree of Doctor of Dental Surgery, are free of all suspicion.

To the honor of the American Schools we are obliged to say, that none of them ever give a degree "*in absentia.*" Whoever wants to earn the title, has to make the trip to America.

Mr. Witzel says exactly, no college in America confers a degree, "*in absentia,*" only "*in præsentia,*" and only by honest work and study is the Doctor's degree obtained.

And anyhow he pretends his "*in absentia,*" bought and so-called American diploma to be real and legal.

It is impossible to understand that Mr. Witzel can have the insolence, contrary to his actions, to behave himself like a defender of the honor and dignity of the dental profession, and to write nonsense, like that referred to.

ARTICLE IV.

On General and Local Acidity.

BY JOHN C. PETERS, M. D.

Numerous acids exist normally, or are produced in excess in the human frame.

Among the fatty acids, Glycero-phosphoric acid is found in the yolk of the ovum, in the cerebral substance, and in the bile.

Formic acid occurs in the fluids with which the muscles, brain and spleen are saturated; also in the sweat in considerable quantities; and in the blood of dogs after a prolonged sugar diet. It is also found pathologically in the blood, in rheumatism, suppression of perspiration, &c.

Acetic acid is a constituent of the juices of the muscles and spleen, and has been observed in the perspiration. It is known as one of the ingredients of the gastric juice, and probably occurs in the fluids of the brain. It appears as an

occasional constituent of the blood after partaking of spirits in excess.

Secretions both of an acid and akaline character are normal products of the mucous membrane of the stomach; the former being furnished by the glands of the fundus and body of the organ, which are lined by spheroidal epithelium, and which furnish the true gastric juice; the latter by those of the pyloric region, whose epithelium is columnar and whose products are those of ordinary mucus, having little or no digestive properties.

The presence of an excessive amount of free acid in the stomach is not in the majority of cases, due to excessive secretion from its coats; for gastric juice is not only secreted in the presence of food, but depends, with great frequency, on unnatural changes in the food, generally of a fermentative character. Acidity from fermentation may arise (1,) in all cases where digestion is delayed from imperfect supplies of gastric juice; (2,) when food in a state of fermentation is introduced into the stomach in quantities sufficient to neutralize the antiseptic action of the gastric juice; (3,) when an excess of mucus possessing a catalytic action is secreted by the stomach; (4,) when proper changes are not effected during mastication in the amylaceous portions of the food by the salivary and buccal secretions; or, (5,) when an excess of starchy or amylaceous substances is taken with the food.

The results of this fermentative action is shown in the formation of acid products usually derived from the starchy and saccharine elements. The acids so produced, and which are often formed with great rapidity, are, chiefly, the lactic, butyric and acetic, which may appear in great abundance. Gas, which consists principally of carbonic acid and volatile carburetted hydrogen, is apt to appear; while sulphuretted compounds only appear in the stomach when articles containing this element have been taken with the food.

Fœrichs divides the fermentative processes which may

take place in the stomach into the following: (a,) Alcoholic; (b,) Lactic; (c,) Butyic. The lactic, which is a simple acid fermentation, causes no evolution of gas. The butyric succeeds the lactic and is associated only with the formation of carbonic acid; but as butyric acid is volatile, its taste is perceptible in the eructations. Alcoholic fermentation may be attended by the formation of acetic acid and give rise to acid eructation. The conditions of fermentation are delay of absorption and the presence of much mucus in the stomach.

Butyric acid appears in flesh and the juices of the spleen; also in milk, sweet and secretions of the sebaceous follicles of many parts ot the body, as the armpits and genitals. It is also found, as before said, in the stomach and bowels, as a product of the fermentation of hydro-carbons.

Palmitic acid is an element in almost all fats of the vegetable and animal kingdom. It forms with glycerin, a compound occurring naturally and abundantly in human fat.

Stearic acid is also a widely spread constituent of the animal neutral fats in the human body, but is exceeded in quantity by palmitic acid.

Oleic acid is scentless and tasteless, and is found as a most important constituent of the neutral fats of the body.

Margaric acid was formerly believed to be the most widely distributed of all the animal fats; but a mixture of equal parts of palmitic and stearic acids has naturally the same composition as margaric acid.

Lactic acid is a decomposition product, easily formed from starch or sugary fluids by fermentation, and is found in the stomach. It can also be formed from Inosite or muscle-sugar, and is supposed to play a large part in the rheumatic diathesis. It is also found in the intestinal canal as a decomposition product of ingested carbo-hydrates; and if it is the acid of gastric juice, intestinal digestion may include a larger role than is usually admitted. It has also been found in the brain and various gland-fluids of the body

Frey says there can be no doubt, when it is not a product of fermentation, it is derived from the decomposition of histogenic substances.

Hydrochloric acid is only found free in the gastric juices. The presence of an acid is necessary for the transformation which essentially constitutes the digestive function of the stomach. In the gastric juice, therefore, pepsin is united with an acid in a free state, the exact nature of which has been much disputed. Some maintain that it is hydrochloric acid; others, *phosphoric acid* or acid phosphate of lime; and others still, lactic acid. Kuss says the latter opinion is now most generally held, but the presence of muriatic acid in excess in the stomach is absolutely necessary to retain the chloride of sodium in the blood.

The real gastric juice is only secreted when an albuminoid substance like meat, fibrin albumen, &c., or an aliment which essentially requires the action of gastric juice to digest it, is put into the stomach.

Oxalic acid is found abundantly throughout the vegetable kingdom, and appears as an end-product in the oxidation of most animal and vegetable substances. With one atom of calcium, it forms the neutral oxalate of calcium; which is almost the only one of its salts found in the human body. Still, a large amount of it is never met with in the body; although in very minute quantity, it is a normal constituent of the urine. It is most frequently observed after a vegetable diet, and the use of drinks containing a large amount of carbonic acid. It appears also in conjunction with disturbance of the respiratory functions, and may give rise to mulberry calculus. It has been met with in the gall bladder, and in uterine mucus. It may arise in excess from a preponderating use of vegetable food, and from the decomposition of various animal matters; especially from the oxidation of uric acid, as after the injection of urates into the blood, the amount of both urea and oxalic acid is increased in the urine. The oxalic acid diathesis will be treated of hereafter.

Succinic acid arises from the oxidation of fatty acids, and from the fermentation of different organic acids. It was formerly supposed only to occur as a pathological constituent of the body in encysted tumors and dropsical fluids; but it has been found in a number of gland-juices, viz., those of the spleen, thymus and thyroid. It also exists in the blood of herbivorous mammals, in human urine and that of carnivora and vegetable feeders, after fatty diet or the use of malic acid.

The nitrogenous animal-acids are of course not found in the vegetable kingdom at all; they are all mutation-products of histogenic matters, or plastic alimentary materials, and all except two are constituents, either of the urine or the bile, forming essential elements of these secretions.

Inosinic acid is a constituent of muscle-juice, and probably produced from fleshy fibre. Hydrotinic acid is a constituent of human sweat, and probably derived from the above. It is not known what disorders of the muscular system their excess may occasion.

Uric acid is a derivative of ammonia, and when deposited in the urine is discolored by the pigmentary matters of that fluid, so that its crystals appear yellowish or brownish. Dumb-bell crystals may appear as a natural product, or may be produced by the decomposition of urate of potassium. It requires 14,000 parts of cold and 1,800 of hot water to dissolve it. It is the source of urea, allantoin, oxalic acid and glycin; and is a constant constituent of human urine in very minute quantities, however, only one part per thousand consisting of it. Its amount varies but little according to the nature of the food taken, but much in certain morbid conditions, especially in gout. It has also been found in the blood, in the fluids of the brain, lungs and spleen. It is a mutation-product of nitrogenized tissue constituents.

Hippuric acid is a glycin, or amido-acetic acid, in which one atom of hydrogen is replaced by benzoyl, the radicle of benzoic acid. On being heated with acids and alkalies, it

is split up into benzoic acid and glycin, after taking up water. It appears in human urine in about the same amount as uric acid, but in longer amount in certain diseased states of the system. It has not been found in the blood or juices of the system, but in the scales of ichthyosis. Frey says it is a fact of great interest that benzoic, kinic and cinamic acids, oil of bitter almonds and of tolu, when introduced into the stomach, are excreted as hippuric acid through the kidneys. On the oxidation of protein substances by permanganate potash, a great quantity of benzoic acid is developed.

Glycocholate acid which belongs to the bile, is analogous in composition to hippuric acid, splitting up like the latter into glycin, and a non-nitrogenous acid, viz., cholic acid.

Glycocholic of sodium is an essential constituent of bile.

Taurocholic acid splits up, not into glycin, but into cholic acid and taurin, an indifferent substance containing sulphur. It dissolves fats, fatty acids, and choles-tearin, with great readiness. Combined with sodium it forms the second chief constituent of the bile of man and numerous mammels, viz., the tauro-cholate of sodium.

Lencin, or amidocapronic acid, or starch-capronic acid, the latter occurring in a free state with glycerin in butter and sweat. It can be produced by the artificial decomposition of protein compounds, glutin substances and elastin, by means of acids and alkalies. It is also a product of the putrefaction of protein substances, especially tyrosin. It is a physiological decomposition product of great interest, as it is widely distributed throughout the body. We must hence distinguish between lencin produced by the putrefaction of histogenic substances, and that formed physiologically in the living body. The latter form is generally accompanied by tyrosin, which is a constituent of many organic fluids and gland juices, and under some diseased conditions is often unusually abundant in organs where scarcely a trace can be detected in health.

It occurs normally in the spleen, pancreas and its secre-

tions, the salivary glands and saliva, in the lymphatic, thymus and thyroid glands and in the fluid saturating the pulmonary tissue. In the healthy liver and brain it is scarely to be found; and it is rare in the muscles except those of the heart where it is not unfrequently seen as a pathological product. At times it is present in large quantities in the kidneys and may pass into the urine.

These facts prove the existence in different organs of peculiar and distinct series of mutations among their histogenic substances. Thus leucin is no mutation product of muscle, except, perhaps, in fatty hearts, but is of many grandular structures. It is formed physiologically from many protein compounds, gelatin yielding substances and elastin; it can also be formed from albuminates by the action of one of the ferments existing in the pancreatic juice. It is partially excreted with the glandular secretions and appears in the intestinal canal. In the lymphatic and blood vascular glands it is found in conjunction with ammonia, suggesting the supposition that leucin may be resolved there into ammonia and volatile fatty acids, which it certainly does in the lower part of the intestinal canal. It will be further treated of under Leucaemia.

Tyrosin is also an amido, or starch-acid; it arises like Leucin from the decomposition of protein matters, but not from elastic and gelatin. Keratin and animal mucus also yield more tyrosin far than the original protein matters. It is a physiological companion of Leucin both in the normal and diseased body, but does not occur so extensively. Like leucin it occurs not in the healthy liver, probably because it then undergoes rapid transformation into other compounds; but is found in diseased livers. It has been found alone in no inconsiderable amount in the spleen and tissue of the pancreas, and in the digestion of albumen in pancreatic juice.

Glycin, or glycocoll, or glutin-sugar, is in reality an amido acetic acid, which does not occur free in the system but may arise from the splitting up of hippuric-uric, and

one of the biliary acids, viz.: the glycocholic, and from the decomposition of glutin and chondrin. Some unknown substance, nearly related to glycin, is probably formed from glutinous matters, and which, in combination with cholic acid, constitutes glycocholic acid; and with benzoic, hippuric acid. It then becomes free in the form of glycin upon the absorption of water and splitting up of the acids. Glycin leaves the body partly through the kidneys with the hippuric acid, and is partly re-absorbed into the blood as a component of glycocholic acid.

Taurin is an amido-sulf-ethylemic acid and may be obtained by the splitting up of one of the biliary, viz.: the taurocholic; and contains all the sulphur of the bile. It becomes free on the decomposition of taurocholic acid in the body, and then appears in abnormal as well as putrid bile; and in the lower part of the intestinal canal. It has been found in the juices of the renal and pulmonary tissues and was formerly described as pulmonic acid. The supra-renal capsules contain it, but the blood does not. From the fact that it contains sulphur there can hardly be any doubt that it is derived from albuminous matters. Taurin splits up by the fermentative action of the mucus of the gall bladder, in the presence of alkalies, into carbonate of ammonium, sulphurous and acetic acids. The acetic acid combined with an alkali is changed into a carbonate; and the sulphurous acid in combination with sodium becomes converted, at a later period, into sulphuric acid; so that we meet with Na. 2, C. S. O. 4, in putrefying bile. As most of the bile poured out into the intestines is re-absorbed, the sulphates ultimately leave the body with the urine.

Stomachal acidity can only be palliated, not cured by alkalies. As it arises from a fermentative process, *sulphurous acid*, which arrests putrefaction and fermentation has been suggested. Dr. Lawson speaks highly of it as a remedy for pyrosis, which he says it never fails to relieve, while the sulphites are said to be useless. The sulphites and hypo-sulphites have been used to destroy sarcinae and

torlaue in the stomach, as these are products or agents of fermentation.

Ringer thinks that alkalies have not only the power to increase the secretion of the gastric juice, which is an acid secretion, but when applied to the orifices of glands with *acid* secretions, increase their secreting power; while, when applied to glands with alkaline secretions, it checks or lessens them.

He repeats that alkalies increase the secretion of the gastric juice, and may thus prove useful in promoting digestion, if given shortly before a meal; while, if given soon after a meal, they will neutralize the acid of the gastric juice, and effectually retard and impede digestion. Schiff, on the other hand, believes that real gastric juice is only secreted when albuminoid aliment is taken into the stomach, when the mucous coat becomes red and turgescent, and then ensues an abundant secretion of gastric juice, which soon transforms the albuminoid aliment into albuminose. Hence the secretion of gastric juice is said to be the result of a special sensibility on the part of the mucous membrane of the stomach, which cannot be deceived even by alkalies; but the presence of an aliment suited to digestion by means of the gastric juice is always needed to produce it. Instead of alkalies, Schiff gives soup an hour or two before meals, which causes the stomach to secrete a purely acid fluid, which serves to dissolve the peptogenous elements, and these becoming absorbed and mixing with the blood, enable it to furnish pepsin to the glands of the stomach, when the secretion of gastric juice becomes constantly more active, or in short, *peptic*, and thus prevents the fermentation of the coming meal.

When, on the other hand, a patient complains of heartburn and acid eructations, these may be removed at once by the exhibition of a bicarbonate alkali, which neutralizes the excess of acid in the stomach. But unless combined or preceded by a bitter tonic, this treatment will generally prove merely palliative.

The milder alkalies, as the bicarbonates of potash, soda, or magnesia, are used with great benefit in diarrhœa, due to excess of acids in the intestines. By neutralizing the excess of acid they arrest the diarrhœa.

As alkalies pass readily into the blood, the alkalinity of this fluid must be increased by them. They have also been given for excess of uric acid in the urine, with the expectation of oxidizing this product of the nitrogenous tissues, and so converting it into urea. They do not oxidize the uric acid in the blood, but by rendering the urine weakly, acid or even alkaline, they convert the excess of uric acid into a more soluble urate. This treatment will also prevent the growth of uric acid calculi. Painful micturition not unfrequently depends on the existence of uric acid or bi-urates in the form of speiular crystals, which in their passage irritate the pelves of the kidneys and the ureters almost as severely as calculi, and also the urethra. Alkalies dissolve these, and render them innocuous.

The bicarbonate or citrate of potash, or Rochelle salts, are often employed in rheumatism, which is supposed to be caused by an excessive formation of lactic acid in the body. In many cases the rheumatic pain is much relieved as soon as the patient is well under the action of the alkali, and the urine has become fairly alkaline.

Renal calculi are generally composed of uric acid only, and if the urine be kept alkaline, it will in time reduce the calculus sufficiently to allow it to pass down the ureter. Ringer says we certainly meet with patients complaining of much pain in the back, passing bloody urine containing a large quantity of uric acid crystals and a little pus, who are curable with large doses of citrate of potash.

Gout stones are composed of the urates, and as the urate of lithia is the most soluble of the uric acid salts, a strong solution of lithia is applied locally to remove gouty enlargements and ulcers. In the latter case the urates being intimately mixed with the connective tissue, and oozing very slowly through the broken surface, are dissolved and

washed away by the lithia solutions, thus enabling the sore to heal. The citrate of lithia is to be preferred, but a strong solution of citrate of potash is said by Ringer to be nearly, if not quite as useful. It probably converts the bi-urates into neutral urates, and in the more soluble form they are carried off through the skin. Equal parts of citrate of potash and water may be used, as neither it nor the citrate of potash irritate the skin.

Mr. Mialhe has pointed out that the principal animal fluids, with the exception of the urine and sweat, are alkaline; but owing to sedentary occupations and animal diet, excretion is very imperfectly performed, and a great deal of acid which ought to be elminated, is retained within the system, and a very large quantity of alkaline ingesta is required to neutralize the retained acids. On the other hand, an active and a laborious life, and a mostly vegetable diet, render the toleration of alkalies more difficult. The treatment must vary as the fatty acids, nitrogenous animal acids, and the non-nitrogenous or vegetable acids abound.

Stille prefers *soda* in those forms of dyspepsia in which acidity of the primæ viæ is the most striking symptoms; whether the acidity arises from acetous fermentation of amylaceous or saccharine food, the ingestion of sour substances, the development of carbonic acid gas in the bowels, an excessive formation of fatty acids from the use of too much oleaginous food, and a superformation of fatty acids in the system, especially when there are sour vomitings, eructations, and dejections, with the tongue clear, red and even shining, and the mouth dry. Also in those numerous ailments of young children which arise from the ingestion of sour milk, or the generation of acid in the stomach and bowels, marked by colic and the dejection of frequent sour and greenish stools; or of a thin liquid containing small fragments of fæces resembling portions of hard boiled eggs, or of spinach and eggs finely hashed together, &c. Trousseau succeeded in diminishing the mortality among young children in the Neckar hospital, by adding ten grains of bicarbonate of soda to each quart of milk given them.

Magnesia is also advised by Stille in most forms of derangement of digestion, attended with acidity of the stomach. It has even arrested the vomiting of pregnancy when the rejected fluid was strongly acid. In all cases of sour stomach, heart-burn, colic, sick headache and mental depression, especially when accompanied by constipation.

Bismuth is an astringent and sedative, very useful in the various forms of pyrosis, whether acid, alkaline or neutral. Graves successfully treated acidity of the stomach with it, but he generally mixed it with magnesia. Flatulent dyspepsia from acid fermentation yields more or less to it; but it may be mixed with equal quantities of vegetable charcoal.

Acids are astringents which check profuse secretions, and Ringer says that repeated and careful experiments have established the fact that dilute acids taken into the stomach check its secretions; and that practical men well know that acids check acidity, removing the acid eructations, the heart-burn and sense of discomfort at the chest and hypogastrium arising from excess of acid in the stomach. Hydrochloric or nitric acid is generally preferred. Dr. Day, of St. Andrews, noticed in patients greatly annoyed by eructations of offensive gas with the odor and flavor of rotten eggs, consisting largely of sulphuretted hydrogen gas, were apt to have their urine loaded with oxalic acid, for which he strongly recommends the employment of the mineral acids. Nitric acid is also of great service in the treatment of dyspeptics with oxalic acid in their urine, but who are free from sulphuretted hydrogen eructations and who suffer from great mental depression.

In another class of cases, Ringer says, not unfrequently, soon after a meal, a fluid regurgitates almost unconsciously into the mouth so strongly acid that it sets the teeth on edge. The exhibition of nitric or hydrochloric acid, shortly before each meal, in virtue of its astringency, almost immediately removes this acid pyrosis. He continues that it need hardly be said that acids given soon after a meal to patients troubled with acidity and heart-burn greatly aggravates their sufferings. This is adding fuel to the fire.

Ammonia carb, in doses of five to seven grains in some aromatic water, is very useful in acidity of the primæ viæ, heart-burn and flatulence, particularly when occuring in cases of atonic dyspepsia, or in hysterical females, in which the ordinary alkalies are too debilitating. The aromatic spirit of ammonia should also be thought of.

Liquor calcis is thought particularly useful in cardialgia and dyspepsia arising from acidity, especially in persons whose urine shows a strong acid reaction and when vomiting is a prominent symptom. It is best given in milk in doses of ℥ ss. to ℥ ij. It is often permanently and speedily effectual.

Nux vomica, in doses of five drops before each meal, is said by Ringer to be of great service in a group of symptoms, including weight at the pit of the stomach after food, acidity, heart-burn and flatulence, accompanied by heat and weight at the top of the head. It acts as a tonic to the muscular coat of the stomach, and to the vaso-motor nerves, contracting the capillaries and thus removing congestion of the stomach and brain. Ergot may be used for the same purpose.

Ringer says few remedies are more useful in certain diseases of the stomach than *Arsenic*. When the vomiting is intensely bitter and sour, and of a green color, it will not only arrest the vomiting, but will often improve the state of the stomach and restore both appetite and digestion. It sometimes removes heart-burn.

The liquor Ammoniæ Anisatus of the Germans is a useful and pleasant preparation; often more so than aromatic spirits of ammonia.—*Physician and Pharmacist.*

ARTICLE V.

Chloroform in Convulsions of Infants and Children.

BY J. D. BLAKE, M. D., BALTIMORE, MD.

Certain it is, that we are called upon to treat few diseases that are more formidable or more fatal than convulsions of infants and children. The great number of deaths from

convulsions, especially of infants, which we constantly find in all of our mortality returns, I think will bear witness to the above statement, for correctness. Not desiring, however, to enter to any great extent upon the question of the nature of the different types or forms of convulsions of early life, I shall content myself at this time with referring to the general opinion of pathologists of the present day, that by far the greatest proportion of infantile convulsions are sympathetic or functional merely. "The grand reason (says Dr. West) of their frequency is, no doubt, to be found in the preponderance or predominance of the spinal over the cerebral system in early life. Thus it is, that in a large majority of cases of convulsions we find the cause due to some morbific agent acting upon some distant excitant surface or part, as the teeth, stomach, bowels, etc., there being, as a rule, no organic lesions found after death." Consequently, in cases of infantile convulsions, particularly when of a sympathetic, reflex or eccentric type, after removing all traceable exciting source of irritation, and diminishing as far as possible any excess of vascular action in the nervous centres, physicians have generally proceeded to combat the disease, if it still persisted, with medicinal agents, that tended to reduce the super-irritability of the excito-motory system, or otherwise to restore it to a proper and healthy standard of action.

To fulfill this indication, preparations of different kinds have been used, such as chloral, bromide of potassium, the different preparations of opium, hyoscyamus, and other antispasmodics too numerous to mention. And yet, notwithstanding these and the long list of other preparations used and recommended by physicians, we are constantly called to cases of infantile convulsions over which these remedies seem to exert but little, if any, control; indeed, in a large number of cases we find it an impossibility to administer any medicine, whatever, from the continued muscular jerking and spasm of the jaw. In such cases it is customary to look to the condition of the skin, bowels,

head, etc.: thus we use enemata, warm baths, cold to the head if indicated, and sometimes when not. This is all that is left us to do, and this, in many instances, rather to relieve the great anxiety of the parents and relatives, than the condition of the patient. There is no doubt that there is a goodly number of cases relieved or moderated by such remedies as above spoken of. But these are not the cases of which I wish to speak at this time. It is of those cases which we find do not yield to such remedies; in other words, the chronic or subacute form of convulsions, which, on account of their duration, exhaust the little patient to such an extent as to prevent its recovery, even if it should outlive the convulsions.

In order that I may more fully explain myself, I shall relate a few cases, selected from fourteen, in which I have taken special note, and in which I have used chloroform with so much benefit to my little patients and satisfaction to myself.

Case 1.—March 13th, 1877, I was called, about 3 P. M., to see a little son of Mr. K., eight months old. When I arrived at the home of my patient I found him in violent convulsions, affecting, at that time, both sides, at other times only one side. Upon inquiring, I was informed by the mother that Dr. I., their family physician, had been called early in the day, and had prescribed for the patient, gave it an enema and a warm bath, after which he left, saying that the convulsions would soon cease. The Doctor was giving one-twelfth grain of calomel, with one grain of sugar, every half hour. In addition to this, he ordered potassium bromide and chloral, with tincture of hyoscyamus and syrup, to be given in half teaspoonful doses every hour, if the clenched teeth or convulsion did not prevent, which they did, consequently none of the medicine could be given. Finding the convulsions did not cease, the mother gave it a mustard bath, applied mustard to the spine, feet, hands, legs, etc. Notwithstanding all this the convulsions continued, more violent at times than at others. The patient

at this time was bathed in perspiration; pulse so rapid that to count it was impossible; pupils dilated. Knowing that he was becoming rapidly exhausted, I immediately ordered half an ounce of Squibb's chloroform, which I allowed him to inhale from my handkerchief until he was perfectly relaxed and the convulsive movement had entirely ceased, which I do not think took more than two minutes from the time I commenced the inhalation. The pulse now became more regular and full, the breathing was calm and easy, and the child passed into a sweet sleep, from which it did not awake for thirty-six minutes, at which time I noticed a slight twitching of the muscles of the face and eye. I again applied the handkerchief, only allowing him to take an occasional whiff, when he again fell into a quiet sleep, and remained so for three-quarters of an hour. In the meantime Dr. I. arrived, and seemed somewhat surprised to find that his prescriptions had failed to relieve the child, but expressed satisfaction with the result of chloroform in the case. He said he had never used it in such cases, but thought he would in future when such cases presented themselves. I then resigned the patient to Dr. I., who told me next morning that he had no further trouble. The patient, he said, awoke much refreshed, took a little nourishment and went off to sleep again, from which he did not awake for two hours. He made a rapid recovery.

Case 2.—On the night of June 17th, 1878, I was summoned in great haste to see a fourteen months old daughter of Mr. L. B., who, I was informed upon arriving, had been in convulsions since early in the afternoon; their family physician, who was a homœopath, had used all of his remedies without benefit; in addition, the child had been put in a warm mustard bath, an enema had been given, the bowels had moved freely, it had vomited after an emetic had been given, and yet the convulsions continued, and at times very violent; so much so that the physician gave the case up as hopeless, saying it could not recover. I used chloroform here as in the other case, with almost equal success. The

child having been placed thoroughly under the influence of the anæsthetic, I found the pupils, which were widely dilated, had contracted down almost to the normal condition; the pulse, which was thread-like and so quick that I could not count it, became full and much slower; the respiration became slower and more natural. In this case however, I had to renew the inhalations three times, as the convulsive movements would return as the effect passed away. On the third application of the inhaler, however, the child remained asleep for more than an hour, when it awoke, with no return of the convulsions, took a little water, went off to sleep again, arousing two and a half hours later. With the exception of being restless and a little fretful, she made a rapid recovery. Now, there are many other cases that I might relate, but this I think will suffice to prove the efficacy of chloroform in such cases; and especially so, as all the usual remedies had been used without success.

There is another class of cases in which I think chloroform serves both to control the convulsive movements and aid materially in making our diagnosis. The following case will illustrate my meaning: I was called January 2d, about 1 o'clock, A. M., to see a nine year old son of Mr. L., who was taken with convulsions about mid-night. The cause was unknown, as he had never had convulsions before. I ordered an enema, also a warm bath, in addition to one he had received before my arrival. The bowels moved freely; the convulsions continued without the slightest abatement; I could get nothing into his mouth. I ordered chloroform, which I used as before, always keeping up the inhalation until the convulsive movements ceased entirely. When this took place, however, in this patient, I had the satisfaction of seeing him become excessively nauseated, followed by copious vomiting. Upon examination of the matter vomited, I found it to contain large quantities of *peanuts*, pieces of candy, and undigested food, which the boy had obtained the evening before by visiting his grandparents without the knowledge of his parents. After the

stomach was evacuated the boy had no more convulsions, but was able to get up and play around the next morning. Now, had I known the cause of the convulsions, or the contents of the stomach, I know of no means by which I could have administered an emetic which would have acted so promptly, so easily and so satisfactorily as did the chloroform.

It is a well known fact that chloroform possesses the property of diminishing the power of the nerves in receiving and communicating, and of the brain in perceiving sensation, whether arising from internal or external causes; it further arrests the reflex action of the spinal cord. This being its action, we do not think the day far distant when chloroform will be universally recognized as the remedy par excellence in convulsions of infants and children.—*Med. and Surg. Reporter.*

ARTICLE VI.

The Goodyear Company's Patent.

(An Explanation in Behalf of the Dentists.)

To the Editor of the New-York Times:

The statement made in your paper of 4th inst. in the article signed "Goodyear Dental Vulcanite Company, by E. Ernst Caduc, Secretary," and also those made by "M. D." in your issue of April 30th, are so incorrect and so unfair that I send you page 169 of the "Contemporary Biography of New-York," and I ask you, in simple justice to the dental profession in this country, to publish the portion relating to Dr. Thomas Bryan Gunning's legal contest with, and complete defeat of, Josiah Bacon and his employers. J. A. B.

"The World's Fair, held in London in 1851, contained several exhibits of artificial teeth set on plastic basis or plates, but nothing approaching to the hard rubber, for which an American patent was granted to Nelson Goodyear in May of the same year. His brother Charles ob-

tained his first idea of applying it to artificial teeth while in Europe to attend the fair, and experiments were subsequently made to adapt it for use in the mouth, but with no useful result until 1857, and this of little importance for two or three years later. In 1861 Dr. Gunning purchased the right to use the Goodyear patents through all their extensions. In June, 1864, the patents had less than a year to run, but a new patent for the application of the rubber to artificial teeth was obtained on the ground that one John A. Cummings had perfected the process in 1855. This patent, having a 17 year term, extended the monopoly from 14 years to 30, that is, to 1881, and to enforce this, the Goodyear patents being extended seven years, a license was given to use both sets of patents, so that the Goodyear patents sustained the Cummings. This was resisted by many who admitted the validity of the Goodyear patents, but suits were brought, and the Cummings patent sustained by the United States Circuit Court in Boston, in 1866. As Dr. Gunning would not be made an example of submission to what he deemed an illegal claim, several bills in equity were filed against him, but the company rested as soon as his answers were filed. In the Autumn of 1871 the case known as the 'Gardner appeal' was presented to the dentists, who rallied to its support, as urgently advised by leading members of the profession. But the United States Supreme Court decided adversely to the dentists, and affirmed the Cummings patent on May 6th, 1872, the day the Goodyear patents expired. The company then commenced another (the fourth) suit against Dr. Gunning, who, finding that his patent council had accepted a retainer from his opponents and could not appear for him, instructed his attorney to do so instead. Gunning's desire was to have the decision in the Gardner case recalled, and he offered to break the Cummings patent if the American Dental Association would co-operate with him. As this offer was not accepted, it was impossible to form a combination to bring the company to a fair fight on the merits of the

case. Dr. Gunning, therefore, decided to force the company to a settlement with himself. The result was, that rather than have the answer which he had dictated filed, they acknowledged his right to do as he had done, and stipulated that he should use all the improvements claimed under their patents without molestation in the future. Their bill was dismissed by Judge Woodruff, October 18th, 1872, the company paying the taxed costs. Dr. Gunning had warned the dentists against the Gardner appeal case. Now, although his personal interest in the matter was at an end, he still earnestly desired to release them from unjust exaction. Having submitted the matter to Charles O'Conor, Dr. Gunning sought Judge Black, and gave him full explanations, together with Mr. O'Conor's written views. Judge Black then determined to make the motion before the Supreme Court, and it being shown that the counsel on both sides of the Gardner case had been paid by the complainant, on March 3rd, 1873, the court dismissed that case and recalled its mandate, although it had issued to the Circuit Court. This is the first instance in which the Supreme Court of the United States ever revoked its decision. By this revocation the dentists were again at liberty to contest the Cummings patent."

ARTICLE VII.

Dental Associations.

National Dental Association.

The Eleventh Annual Meeting of this Association, (late "Southern,") will be held in Augusta, Georgia, commencing on the 2nd Tuesday in July, 1879, at 10 A. M.

It is expected that the members of the Georgia, South Carolina and North Carolina State Dental Societies will be present, and a cordial invitation is extended to the profession generally.

Officers.

President.—Prof. F. J. S. Gorgas, Baltimore, Md.

1st Vice President.—Dr. L. D. Carpenter, Atlanta, Ga.

2nd Vice President.—Dr. J. R. Walker, New Orleans, La.
3rd Vice President.—Dr. John G. Wayt, Richmond, Va.
Cor. Secretary.—Dr. A. C. Ford, Atlanta, Ga.
Rec. Secretary.—Dr. E. S. Chisholm, Tuscaloosa, Ala.
Treasurer.—Dr. H. A. Lowrance, Athens, Ga.
Executive Committee.—Drs. W. C. Wardlaw, G. H. Winkler, of Augusta; G. W. H. Whitaker, Sandersville, Ga.

The members of the different Standing Committees are earnestly requested to be present, and present papers on the subjects designated. Proper arrangements will be made for reduction of Rail Road fares, &c., by the Executive Committee.

E. S. Chisholm,
Recording Secretary.

South Carolina State Dental Association.

The Ninth Annual Meeting of the South Carolina State Dental Association will be held in the office of the President, J. B. Patrick, D. D. S., July 7th, 1879, at 10 A. M., in Charleston, S. C. That afternoon the Association will adjourn to meet in joint session with the Southern Dental Association and Georgia Dental Society, next morning, July 8th, at Augusta, Ga.

All respectable dentists are informed, that it is their privilege and duty to attend one or both of these meetings. Every inducement which can, will be afforded the profession.

The State Board of Dental Examiners will meet at Charleston, in the office of Dr. J. B. Patrick, July 7th, 1879, at 10 A. M.

Candidates for the practice of dentistry in South Carolina must apply, at or before that time, to Dr. W. S. Brown, of Charleston.

The attention of graduates in dentistry subsequent to February 23, 1875, is called to Sections 3rd and 7th of an Act of the General Assembly, to regulate the practice of dentistry in this State.

G. F. S. Wright.
Rec. Secretary, Columbia S. C.

Georgia State Dental Society.

The Eleventh Annual Session of the Georgia State Dental Society will be held in the city of Augusta, Ga., on Tuesday, the 8th of July next, at 10 o'clock A. M.

The State Board of Dental examiners meets at the same time and place.

L. D. Carpenter,
Cor. Secretary.

EDITORIAL, ETC.

The National Dental Association.—This Association, late "Southern," as will be seen by the notice in the May and June Nos. of the *Journal*, will hold its eleventh annual session at Augusta, Georgia, commencing July 8th, 1879.

A large number of the most prominent members of the dental profession are exerting their utmost efforts to further the interests of this Association, to make it truly national in its character and objects, and to place it upon a firm and permanent basis.

The officers elected at the Niagara meeting of 1878, are actively at work, and the most cheering reports are received from all quarters, giving the best indication that this Augusta meeting will be the largest dental assembly ever held in the southern part of this country. No less than three State Societies will be present, those of Georgia, North and South Carolina, and there is an interest manifested in different sections of the country, North as well as South, which promises a full representation.

We urge upon all who have the interests of their profession at heart to make every effort to attend this Augusta meeting, where, from the character, and professional standing of those who will be present, much that is useful may be learned, and the objects of a National Association clearly demonstrated. All

dental depots are invited to exhibit their manufactures, and from the replies already received there is not a doubt, but that the display of all the recently invented and improved dental instruments, appliances, materials, etc., etc., will be one of the largest ever made on an occasion of the kind.

Dr. L. D. Carpenter, of Atlanta, Ga., the 1st Vice President of the Association, on account of the illness of Dr. A. C. Ford, the Corresponding Secretary, volunteered to assume the duties of this position, and has been actively at work for months past in doing all that is possible to make the Augusta meeting a grand success. The Recording Secretary, Dr. E. S. Chisholm, of Tuscaloosa, Ala., is also doing all that such a position requires, in the same direction. The Executive Committee, of which Dr. W. C. Wardlaw, of Augusta, Ga., is Chairman, has been actively engaged in making all the necessary arrangements for the meeting, and from all of these officers the most favorable accounts have been received.

The Chairmen and members of the different standing committees are responding nobly, and all interested in this *National* Association are encouraged and hopeful.

Dental practitioners from every part of the country are cordially invited, and will be kindly welcomed.

This meeting being held at a season of the year when the dentist can best afford to be absent from his practice, and also when recreation is beneficial to health, and a change from the daily routine of office life not only desirable but necessary, all who can avail themselves of this opportunity should do so, and thus perform a duty they owe to their profession as well as to themselves.

Proceedings of the Dental Association of the State of Maryland and the District of Columbia, Washington, October 8th, 9th and 10th, 1878.

A volume of 96 pages, just received. An abstract of these proceedings was given in the November number of this Journal, and several of the papers published in part. Most of the papers presented are well worthy of a careful perusal. It is to be wished that greater promptness were exercised in bringing out such proceedings. Seven months is certainly a needless delay.

The paper of Dr. B. F. Coy, in these Transactions, on the Treatment of the Six Year Molars, contains some points of interest, as the proper time for the extraction of teeth to relieve the overcrowded jaw is a question of great importance. Dr. Coy fixes on eleven years as the most desirable time for the removal of the first permanent molars, where their removal is indicated. He concludes "that in nineteen cases out of twenty it (the extraction of these teeth) is beyond doubt the true course to pursue at the present day."

In the discussion which took place on the question of transmitted tendencies, Prof. Winder took the ground that, contrary to the teaching of the books, eight children out of ten take their teeth from the father, rather than from the mother.

The paper of Dr. J. J. Caldwell, on Anæsthesia and Anæsthetics, is an exceedingly full digest of the status of the profession on these subjects, and is the most voluminous of the papers presented. He quotes largely from the standard authorities, and the abstracts from Dr. Dabney, of Virginia, especially, are full of interest.

A remark of Dr. Coy on the subject of the administration of anæsthetics is worthy of quotation: "I am a firm believer in having the surroundings quiet during the administration of any anæsthetic, and of permitting the patient to recover if possible, without too much officiousness on the part of the operator or his assistant—relatives and friends scarce, or on the back seats. * * Nervousness or indecision on the part of the operator is a bad preparation for the patient who is to submit to the influence of such powerful agents. * * One great point has been gained when you have secured the full confidence of your patient; another when you are sure you have the requisite confidence in yourself."

The paper of Dr. W. H. Atkinson, of New York, on diagnosis and therapeutics, contains some thoughts of interest, less entangled with mystic verbiage than is usual in the author's style. Still, either he is very far ahead, or we, in company with many others, are very far behind in apprehension of ideas as clothed in language, for much of the language used by him is simply unintelligible—to us.

Dr. Caldwell's papers (this gentleman, although a practising physician, seems so fond of the dental associations, as to be al-

most regularly present at some of them,) on Diagnosis and Therapeutics, with a review of Alcoholism and Syphilis, might at first sight seem out of place in the transactions of a dental association, but they were *not* out of place, and were very nicely conceived and expressed documents. The opinions of Dr. Caldwell as to the extreme importance of checking by National Legislation the spread of syphilis, should be carefully considered, and his idea as to the deep injury to mankind by the free prescribing of alcoholic stimulants by physicians, is a truism too little pondered on.

Other papers, by Dr. W. W. Evans, on Mechanical Dentistry, and by Dr. H. B. Noble, on Dental Education and Literature, are thoughtful and suggestive essays. It is hoped that in future such publications will be more carefully proof-read. Many errors mar this pamphlet.

The next meeting of this Association will be in Baltimore, when a largely increased interest is expected. H.

OBITUARY.

Alfred J. Brown, Sr. D. D. S., a Graduate of the Baltimore College of Dental Surgery, of the class of 1853, died suddenly in St. Mary's County, Maryland, May 21, 1879. Dr. Brown commenced the study of dentistry with Dr. F. H. Knapp, about the year 1841, and was one of the oldest practitioners of dentistry in Baltimore, his native city, where he had been in constant practice for a period of 36 years.

Pleasant and genial in his manners, and thoroughly devoted to the interests of his profession, Dr. Brown lived highly respected, and his death is mourned by many sincere friends.

Bryant S. Traywick, D. D. S., of Monroe, North Carolina, and a Graduate of the Baltimore College of Dental Surgery, of the class of 1860, was, a few weeks ago, found dead in his office. The cause of his death was supposed to be heart disease, symptoms of which manifested themselves several years ago.

Dr. Traywick was a respected member of the community in which he lived, and enjoyed during his twenty years of professional life a lucrative practice.

BIBLIOGRAPHICAL.

Transactions of the American Dental Association at the Eighteenth Annual Meeting held at Niagara Falls, August, 1878. Publication Committee: Drs. George H. Cushing, J. N. Crouse and George W. Keely.

This volume contains many interesting essays from the members of the different Standing Committees, and is a valuable addition to dental literature.

Rhymes of Science: Wise and Otherwise, with illustrations. Published by the "Industrial Publication Company," New York, 1879.

A small volume of Scientific Poetry, by O. W. Holmes, Bret Hart, Ingoldsby, Prof. Forbes, Prof. I. H. McQ. Rankine, Hon. R. W. Reynolds, and others. Price 50 cents.

MONTHLY SUMMARY.

Rapid Anæsthesia.—Give the patient the ether-inhaler, let him hold it to his face with one hand and elevate the other. In a few minutes the arm will drop, and there will be from thirty to fifty seconds of unconsciousness, during which minor operations of surgery, reduction of dislocations, etc., can be performed. The right moment must be seized, for, if the patient returns to consciousness, full etherization will then have to be employed. —*Phil. Med. Times.*

Mal-Practice Case.—A case of prosecution for mal-practice, in which a Miss Brooks, of Columbus, Ohio, was plaintiff, and Dr. Todd, D. D. S., of the same city, was defendant, has after a trial lasting thirteen days, been decided adverse to the defendant, judgment being obtained against him for nine hundred and twenty-five dollars.

The operation involved in the case was an attempt to extract an inferior third molar, in which the tooth seems by some means to have escaped the grasp of the instrument used, and passed into the soft tissues on the inner side of the jaw near to its angle, and remaining there for several weeks; it was alleged to have been the cause of extensive disease in the parts, and great suffering and prostration. This, it is presumed, was proven in court.

The tooth, after several weeks lodgment, was removed by another operator.

Of the merits of this case I know but little, having never seen it, and have had only indefinite descriptions of it.

It is quite possible that the manipulation for the removal may have been faulty, or slight inattention on the part of the operator may have been an element in the disaster, or there may have been no fault in either of these respects, and yet to the struggling and resistance of the patient, the accident may have been wholly due; to such an extent does this sometimes occur that the wonder is, that serious accidents do not more frequently take place.

In this instance it is certain that, from some cause or other, a firm and proper grasp was not made upon the tooth with a proper instrument, or it could not have escaped as it did.

This case contains another lesson to the members of our profession, viz: that they should better understand the legal relation that exists between them and their patients; that they should in all doubtful cases put themselves in a safe position before proceeding to operate.

Then again, it should be a stimulus to those seeking to enter the profession, to make themselves most thoroughly familiar with the best modes of practice, and be able to put them into execution.

There are very few, if any, in the practice of dentistry or surgery, who might not, through the machination of mischievous attorneys and the ill advice of friends, be entangled in the meshes of mal-practice suits, not perhaps in many instances with the results of the above case, but any such entanglement is disastrous, whatever the issue may be.

In every such case the members of the profession should come to the rescue, unless it be manifestly a case of mal-practice, and in some such cases money can not make sufficient restitution.

If mal-practice suits are encouraged upon every frivolous pretense, then no one knows when he is safe.

Let the profession demand of its own members the largest measure of attainments and ability, and then stand solid as one man against unjust prosecutions for alleged mal-practice.—*Dental Register.*

Chewing Gum.—Among the quiet little manufactures of the country is that of chewing gum. One factory exists in this city, and others are in New England, New York State, Ohio, Illinois, and Tennessee. The gum is sold by druggists, grocers, and confectioners in cities. Gum from spruce trees was exclusively used until recently, when it found a rival in so-called gum mastic (not real gum mastic,) a white and attractive article made from paraffine, which is sweetened. The consumption of this chewing gum in the United States is about thirty tons yearly; that of spruce gum somewhat less, and that of a gum made in Tennessee, from balsam tolu, and sold in the Southern States, about twenty tons. Lately a material has been used styled "rubber gum." It is from the sap of the sapote tree of South and Central America. The sap, like that of the India rubber tree, has a milky look. The gum was first imported into the United States with a view of melting it with India rubber, in order to produce a cheaper article than the latter. It was found to be impliable, and therefore useless for that purpose. It had long been chewed by South and Central American Indians, and found useful in allaying thirst. Experiments were therefore made here in purifying it for chewing, and with final success. It is tasteless, and has the merit of lasting longer than other gums, which more quickly dissolve and crumble in the mouth. So great is its ductility that a piece half an inch square, after being heated in the mouth, can be stretched into a thread a hundred feet long. Its consumption is about fifty tons a year. Chewing gum does not, like tobacco, require that the saliva shall be expectorated; it does not, like smoking, excite the nerves, nor, like a superabundance of food or drink, hurtfully overload the stomach.—*Scientific News.*

A Remarkable Old Man.—There lives in Machias, Me., a man named John Hughes, who is, now in his 98th year, and who is hale and hearty, working every day, Sundays excepted. Sixteen years ago his eyesight became renewed, and is now as good as when he was young. He has lately had four new natural teeth come in place of those lost many years ago. He attends every town meeting, having voted at every presidential election from Washington to Hayes. He is a pensioner of the war of 1812. He reared a family of 16 children—8 boys and 8 girls—all living to be men and women. Two of his sons reside in Aroostook County, one in Houlton and one in Mapleton. Six of his sons were in the Union army during the rebellion, all of whom were officers.—*Boston Journal.*

Chloroform Accidents.—Many chloroform accidents are doubtless due to impurities in the drug. A French chemist, M. Perrin, states that commercial chloroform has become much less reliable and more dangerous of late years. Sleep is often difficult to get with it, and he mentions some cases in which the attempt had to be given up, after trying successfully the drug procured in several shops. It often produces disorder of the stomach, (moreover, vomiting, etc.,) and twice in his recent experience it caused a state of apparent death, which was followed by extreme exhaustion.

If chloroform, when tested by the addition of sulphuric acid, turns a fine red mahogany tint, it contains impurities and should not be used.—*Med. and Surg. Reporter.*

How to Care for the Eyes.—According to Dr. Javal, of Paris, the increase of near-sightedness in France is due to the over-exertion and fatigue of the eyes. It is well known that after having looked fixedly for some time at a piece of checkered stuff, the sight becomes troubled, the eye being fatigued, through the repetition of the same colors. Now, the same thing will occur in reading a book which rests on the table; if, however, it be moved up and down, the cause of fatigue will be removed. Another origin of fatigue to the eye is the black lines on white ground, such as they exist in almost all the books. The eye is not achromatic; and if the blue color of the solar spectrum be suppressed, the spectrum of diffusion on the retina is to a certain extent avoided, which relieves the eye greatly. Therefore, the printing paper ought to be of a yellowish (wash leather) color. Another cause of fatigue is the length of the printed lines on wide pages of one column.—*Med. and Surg Reporter.*

Action of Substances on the Teeth.—As the result of numerous trials made by the exposure of recently extracted teeth to the action of various substances, M. Maurel comes to the conclusion (in the *Jour. de Therapeutique*) that if various medicinal substances are dangerous in their action on the teeth, others in still larger numbers prove, in their habitual employment, quite inoffensive. Thus, if we are required to take great precautions respecting citric acid, tannin, chlorides of zinc and antimony, perchloride of iron, iodine, sulphate of copper and alum, we may continue to employ with complete safety arsenious and carbolic acids, vinegar, corrosive sublimate, chlorate of potash, alcohol, tincture of benzoin, essence of mint, tincture of quinine, and eau de Cologne. Tobacco, whether used in chewing or smoking, does not injure the teeth beyond causing their discoloration.—*Med. and Surg. Reporter.*

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ARTICLE I.

Treatment of the Dental Pulp.—(Continued.)

BY ARTHUR M. RICE, D. D. S.

Some slight irritation is generally necessary to induce healthy granulation and a healing of the parts by "first intention," as it is termed, but any substance in contact with an organ so highly sensitive as the tooth-pulp, will act sufficiently to produce this effect, and any material that is an irritant in itself is likely in time to produce bad results; so we cannot use too much care in all operations of this nature.

It has now become a general practice to use some intervening substance where oxy-chloride of zinc is employed as a capping over an exposed pulp, and one of the very best materials used for this purpose is a solution of gutta-percha in chloroform. The kind used for base plates is preferred by some, owing to the color, as we can see how much is applied; other materials are also recommended, as Glycerine, Balsam of Fir, Copal Varnish in Ether, or Collodion: any of these preparations will prove serviceable and efficient as a non-irritant.

Perhaps the best method known at the present time, and one likely to be attended by the best results, consists in the use of a pad, "so to speak," composed of lacto-phosphate of lime, or oxide of zinc. Where this latter substance is used it is prepared by mixing the powder with diluted creosote or oil of cloves, using but a small quantity of either liquid. This mixture can be easily worked into a mass fitly called a pad, and is applied directly to the pulp as a covering, and then the oxy-chloride placed over it, and by this method it is claimed that the therapeutic action of the latter is not prevented but only modified by the Oxide of Zinc pad. This is evident from the fact that the powder composing the pad becomes in a short time consolidated with the Oxy-Chloride with which it is covered. In following this course but little, "if any," pain is likely to attend the operation, and it is considered one of the best and surest ways that have been tried.

The lacto-phosphate is used in the same manner, a paste is made by mixing lacto and magna enough to make a solution and then add dry precipitate to make a paste. This can be applied directly to the pulp, but it may be better to use a little of the gutta-percha and chloroform; a drop can be placed over the exposed surface with the point of an instrument, or on a piece of linen or paper cut in a circular form, and placed in such a manner that there will be but little pressure. The paste is now put in and covered with Oxy-Chloride, remembering to use some sedative like chloroform, acetate of morphia, or an emollient such as glycerine before any capping is applied, and if we are careful to observe these little points we will find our efforts crowned with success in a majority of cases.

Weston's dental caps are also recommended as effectual in capping pulps. And one great advantage possessed by them consists in the fact that, no matter what material may be used it is held in position by the cap and does not racture by the pressure used in introducing a filling. In this way Oxy-Chloride can be used in small quantities and

the Chloride largely diluted, and although this preparation may not set firmly in a few minutes, it is secured in its place by the cap. These caps are made of platinum, concave, and provided with a lip on the side so that they can be conveniently handled. The concave surface is filled with the paste of whatever material is used, and pressed to its place with pliers made for the purpose. The paste has a tendency to adhere to the dentine and the cap to the paste, thus proving a protection to the pulp from mechanical pressure in the operation of filling the tooth. The principle seems a good one, and, if what is claimed is practicable they are certainly worth a trial.

When inflammation is present in the pulp a different course of treatment is adopted. Our first efforts should be directed toward establishing a healthy action, and this can only be accomplished by a careful removal of all that serves as an irritant, and by the use of such medicines as the case may require.

Acute inflammation can be distinguished from the chronic form by its symptoms, such as a gnawing pain in its first stages, which gradually increases and becomes constant, deep seated, and throbbing, and after a time almost insupportable, and is owing to the distention of the capillaries of the pulp, which crowd against the unyielding walls in which it is enclosed, and press on the nervous filaments which are everywhere distributed upon it. The course recommended where the vessels are in this congested state, is to deplete the pulp by pricking in that portion where one of the principal arteries would be most likely to be punctured, relieving the congested condition of the capillaries by the abstraction of blood, and at the same time prescribe a cathartic, or, perhaps the bromide of potassium, in doses of from 5 to 40 grains, together with a hot foot bath, and a mustard plaster at the back of the neck. Carbolic or chromic acid is then applied in small quantities and repeated often until a healthy action is set up and the parts restored to a normal condition. If we can accomplish this important result, the tooth may then be filled as in other cases of exposure.

The chronic or local form of inflammation differs from the acute, in that the pain accompanying it is periodical in its nature, occurring at irregular and uncertain intervals, and is often relieved in its early stages by local applications, but where long continued, it gives rise to ulceration of the surface of the pulp. The course of treatment here would consist in the use of Tincture of Aconite Root, Iodine, and Laudanum in equal parts, or a Nitrate of Silver solution, as our object is, to use such remedies as will bring about the formation of healthy granulations on the surface of the pulp, and a healing of the parts by first intention. Where there has been sloughing of the parts there is loss of substance and no secondary dentine will take place, although it is claimed by some that one-half of the whole substance of the pulp can be removed and the remaining part restored to health. But this is extremely doubtful. In any case of this sloughing, the proper course to pursue would be to cleanse the cavity with tepid water, then use lead water, or pure carbolic acid combined with Thymol. After the use of either of these agents, pepsin is applied. This material has a strong affinity for dead matter without any effect on the living tissue, and consequently it is considered the best medicine to be used in this condition of the pulp, and if we can restore healthy action, of course the tooth can be filled successfully. But as a general rule, our safest plan will be to devitalize and remove the pulp, and fill the chamber carefully where there is much complication in the disease.

The other diseases of the pulp, Ossification, and Fungus growth, are hardly to be considered under the head of conservative treatment, as it is necessary, "with rarely an exception," in both conditions, to destroy the pulp and fill the canal, or, in aggravated cases to extract the teeth affected with these diseases, as it would be useless to attempt any treatment with a view to preserving the vitality of the pulp.

There are certain precautions which should be observed in order to secure success in any method of capping, and

even then, under some circumstances, any attempt to save a pulp after it has become exposed, is almost if not utterly useless. For instance; in the case of a person in very poor health, whose blood is thin, pale and of a serous nature, not possessing the necessary salts, &c., for forming bone; or where there is a diseased state of the gums, owing to various constitutional disorders, under such circumstances a pulp would die almost spontaneously, so it is not advisable to attempt to treat it, as we know there is scarcely any chance for success.

On the other hand we often have a case presented where the conditions appear to be in every respect favorable for successful treatment, and we exercise our best judgment and skill in treating it and yet our efforts are not crowned with success, although we are unable to ascertain any cause for the failure. Consequently we conclude that no method of manipulation is absolutely sure to result successfully.

A great mistake that is often made after capping a pulp, is in not paying particular attention to the effects of the operation. In some cases inflammation sets in after a few months, which is indicated by soreness in the tooth, and many delay until periostitis is really established before making any attempt to restore a healthy condition. This is evidently wrong; the filling should be at once removed and the pulp relieved. Sometimes this can be done, and, by the right course of treatment, the vitality still preserved in the tooth; but in a majority of cases we shall find it necessary to destroy the pulp wholly and fill to the apex of the root.

Whatever the condition of the patient who places himself under our care, it is a duty we owe to him and to the profession, to give him the benefit of our best judgment and skill in the treatment of his case at what ever cost of time and labor. We know that many bring reproach upon the profession by careless and unskillful practice and cause needless suffering to their patients, who affirm that dentistry is a fraud and that the members of the profession are unscrupulous designing men, who receive their money without giving an equivalent in return.

While in some cases we cannot blame the individuals for holding and expressing such views, at the same time we hope that all occasion for these criticisms may be removed, and the honest, conscientious practice of the majority may put to shame the unscrupulousness of the few.

ARTICLE II.

(A Review and Criticism on the Transactions of the Dental Association of Maryland and District of Columbia.)

Anæsthesia and Anæsthetics.

ADDRESS BY DR. JOHN J. CALDWELL, BALTIMORE.

I have read with much pleasure Dr. Caldwell's address, and received much instruction. It is a well considered and thoughtful resume of the subject of anæsthetics to the present time. Not only has he presented the views of the ablest writers on the subject, but has added his own comments on their physiological action, which certainly are worthy to rank with the best. Dr. C justly gives the first rank to chloroform in all operations, except those in dental surgery, which last requires an erect or partly erect posture. In such cases nitrous oxide gas is preferable. Chloroform is better than ether or any of its mixtures; chloroform is King. In the chair of criticism, I avail myself of the critic's privilege and speak "*ex cathedra*."

The mode of administration is dwelt upon at sufficient length, where he says the patient must be recumbent, the stomach empty and sufficient amount of atmospheric air admitted along with the agent. I am sorry he did not condemn in stronger language the pernicious and dangerous practice of over-powering the patient at once with a large quantity of chloroform; better garotte to insensibility and proceed with the operation.*

The precautions against swallowing the tongue (a kind of felo-de-se,) are made sufficiently prominent, as well as the

[*The practice of rapid administration and quick overwhelming of the power of resistance finds many advocates among the best men—indeed the leaders—at this day.—*Eds. Amer. Jour. of Dental Science.*]

physiological condition upon which the accident supervenes. It is regretted that he did not analyze with sufficient exhaustiveness the causes of death, as by coma, asphyxia and the like, as in that event he would have traced with but few exceptions death to failure to admit atmospheric air in sufficient quantities.

I have administered chloroform many hundred times, have witnessed its administration in the hospitals of Paris, in the field and in hospitals during the late civil war, and have yet to see the least unpleasantness follow where this precaution has been used.

Two points should be borne in mind,—the carbonized condition of the blood, and the specific action of the agent upon the brain and other nerve centres. People vary in susceptibility to its influence. The negro succumbs more readily than the white race, a physiological fact to which I would invite the attention of those who insist upon negro equality.

I take this occasion to say that the views of Dr. Chisholm in reference to the necessity of bringing the patient fully under the influence of chloroform before commencing an operation, to render the reflex motor system insensible as well as the sentient nervous centres, have my hearty concurrence. Shock is thus avoided, which we know is so often fatal.

Chloroform has not been considered by the Doctor, or by any of the authors cited, as a therapeuetic agent in the treatment of disease. A substance which acts so powerfully upon every part of the nervous system, centricly and excentric, must be a most important remedial agent in a large number of diseases, for there is scarcely one in which the nervous system is not more or less concerned. As early as 1856 I used it in treatment of colic with magical effect. During the late war colic was very common among our soldiers returned from Northern prisons. I used it in a number of severe cases and always with most satisfactory results. It does more than temporary relieve pain, for in many cases the pain does not recur after the efforts of the

chloroform have apparently subsided. In passage of calculus from kidney, it is emphatically *the remedy*, at least in my hands I have had but little trouble with this affection. I administer by inhalation. I have used it but once only in the cold stage of intermittent. The patient had been shaking for two hours in a way I never saw any one else shake, black under the eyes—an Arkansas shake. I thought she would die. I gave chloroform by inhalation, when the paroxism ceased instantly and did not return. A slight fever followed. I used it on the same person a second time under the same circumstances. On this occasion the shivering and shaking returned. I repeated chloroform with arrest and recurrence of symptoms. At the end of about twenty minutes, being under its influence from time to time, the cold stage was arrested. I would suggest the use of chloroform in intermittent and malarial fevers in their outset as a curative agent. Would that some substitute might be discovered for quinine to deprive those harpies of Philadelphia of their blood money, wrung from the sick poor of our country through the instrumentality of an iniquitous tariff.

Chloroform is worthy of a trial in that scourge of the tropics and our Southern Country—Yellow Fever. I suggest it in these cases upon the idea of the same theory of such diseases, the most rational yet put forth of their pathology.

I trust that Dr. Caldwell at some future time will discuss the use of chloroform applied to treatment of diseases. Internally I would suggest it as a remedy for all parasites, it will kill the "bott," so fatal to the horse.

In that part of the address under criticism in which the methods of resuscitation from the effects of chloroform are discussed, prominence is given to the use of Nitrite of Amyl. (See Dabney's writings in which interesting experiments are cited upon dogs, showing its powerful effects, due as he believes to its action on the heart, conclusions which are strengthened by two cases of resuscitation reported by Dr.

R. W. Nelson, of Virginia.) It is worthy of remark that of the four dogs experimented upon, the only one not revived by the Nitrite of Amyl, was the one to whom chloroform had been given *unmixed with atmospheric air.*

Artificial respiration is also recommended. Dr. Cutter, of Boston, has furnished what has been so much needed, a simple mechanical contrivance to pump air or oxygen into the lungs and pump it out. "To pump air in and out of the body without any pressure on the chest—to breathe life into persons."

But I would ask especial attention to that part of Dr. Caldwell's essay which treats of the application of Faradaiac Electricity. Some of the experiments cited upon the pneumogastic nerve after its division, in which electricity supplied the place of nerve force in digestion, are most interesting. It has long been known that electricity is a powerful nervous stimulant, but here we have the fact arrived at of idenity of nerve power and electric force.* The process of digestion being carried on by substituting a battery for the nerve centres of the pneumogastric nerves.

Such being the case, there cannot rest a doubt that in the battery we have the most powerful and efficient means of restoring persons to life when every other known agent would fail. As merely an aid, a stimulant, its powerful effects are recognized, but if indeed the subtle agent we call electricity be the same as nerve force we shall have attained a point in physiology which may enable us to unravel the problem of life. Setting aside all that our confrere has said in regard to chloroform, its physiological action, its mode of administration &c., the means of restoration from

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[*This does not follow necessarily. Although "like causes produce like results," is an axiom, yet in this case neither the cause nor effect in the one case or the other, *i. e.*—the relation between mere force and identity and their coincidence in effect on the pneumogastric are fairly understood. We do not think Dr. C., could fairly be construed as claiming to estabblished complete identity, but only great similarity.—*Eds. Amer. Jour. of Dental Science.*]

its pernicious effects, I regard his suggestion of electricity as the most potent remedy, and opening a new field for its application as a therapeutic agent in the treatment of disease, and trust that Dr. Caldwell will again give public the benefit of his experience and reflection upon Faradaiac Electricity.

In conclusion I would recommend all who desire in brief to review the subject of anæsthetics to consult Dr. Caldwell's admirable resume of the subject as set forth in the transactions of the Dental Association of the State of Maryland and District of Columbia for the year 1878.

I cannot close my remarks without a word to the Dental Profession. I am happy to congratulate them upon the great advance and upward progress of the profession of dentistry. Like surgery, it long remained a purely mechanical art. Time was when surgery was a part of the barber's calling. Time was when medicine was so low that the priests were inhibited from its practice, although in England, Macauley tells us they (the priests) sometimes curried the coach horses and were prohibited from marrying the servant girls. The progress of intellectual development has taken all these high callings from their menial condition. The priest exercises the noblest profession of the world; he is the minister and interpreter of God's holy word, next to his is the mission of those who minister to the sick in body. Dentistry must now takes its place as a branch of surgery; one of her schools has set us a noble example by which great reforms may be effected in medical education, so much needed in these days of medical multiplication. That proficiency, not length of time of study, should be the test demanded for graduation, and that the teachers should never be permitted to examine candidates or grant diplomas.

Martin P. Scott, M. D.

No. 68 *W. Fayette Street, Baltimore, Md.*

ARTICLE III.

Scientific Hysteria.

No stronger illustration of the power and worth of truth is seen than in the constant simulation of the truth. The highest achievement of man is to so imitate the real as to delude the observer, and defy, at least for a time, detection. The desire for prominence, the passion for conspicuousness, the anxiety to be before the public and to gain reputation for scientific attainments, leads not a few into invention in the place of fact, and develops a cheap notoriety in the place of real reputation, and occasionally brings on a diseased condition which may not inappropriately be denominated "Scientific Hysteria." And a more inveterate, troublesome and altogether unmanageable disease comes not within the range of knowledge of man; incurable and desperately chronic. It is said that hysteria simulates any and all diseases known to the medical profession, and is so clever in imitation as to entirely delude the novice; and in scientific hysteria, nothing in the way of science is developed but is made the occasion by the victim of this malady of a new and alarming fit. Is a new idea advanced, the diseased man has a newer one still, far eclipsing the discoverer; is an advance made, the hysteric is more advanced ; is investigation attempted, the sufferer steps forth with "Behold my work in that department." Redundant in words, he covers up the ideas he may have with such an effervescing froth of language as to perplex those who listen to him, and puzzle the hearer or reader as to whether the subject matter was rightly announced. Voluble and loud, he bears down opposition, and replies to criticism with a torrent of gush, until submission is yielded as the only way of escape from his deluge of words.

True science is quiet, calm, unassuming, without pretence or bluster, and her advocates and apostles can calmly afford to await, if need be, the verdict of ages. But the hys-

terical scientist in his wild raving, is furious with all who agree not with him instantly. "Verily this is the truth, and you who do not instantly accept it are blind, foolish, and wicked." "I have discovered, and all that has gone before which contradicts or disagrees with my discovery is not simply a mistake, but falsity itself, and its advocates asses." If he is mildly asked for the evidences of his discoveries, he raves, storms, calls on supernatural help, and drowns the questioner with a delnge of words, complex sentences and high-sounding technecalities which exhaust the speaker and quiet the interlocutor.

Those who have not this disease should be truly grateful. Doubtless it is connate, impossible of cure. But whether acquired or inherited the subject of it is truly a source of terror to his friends as much, if not more than to his foes. Science is great, the truth itself is science, and her apostles are and should be entitled to not only respect but reverence; but for your hysterical scientist, with his ravings and stormings and declarations of discovery, deliver us. Doubtless nothing can be done with such cases, they cannot be locked up nor even locked out; they are ever on the floor, ever before the public, but if this may be classed among the list of "preventable diseases," if there is chance of avoiding it, let us who see it in others, study to avoid it ourselves as a plague.

ARTICLE IV.

The Relations of Dentistry to Medicine.

[An Address read before the Baltimore Medical and Surgical Society, May 7, 1879.]

BY JAMES B. HODGKIN, D. D. S., OF WASHINGTON, D. C.,

Professor of Dental Mechanism and Metallurgy in the Baltimore College of Dental Surgery.

GENTLEMEN:—It has been perhaps a year since I stood before you, in response to your kind invitation, to give you a few thoughts on "Some of the causes of the decay of the

teeth of Americans;" and I believe that there was then a sort of tacit understanding that I should supplement the two addresses then made, with some reflections on "*the relations of dentistry to medicine.*" I have felt that this was due, not less to my own, than to your calling, from the fact that our practice so often overlaps, and that we find consultations with you useful. And as nothing so conduces to harmony and good fellowship as a perfect understanding of the legitimate field of operations of fellow-workers in life, I trust that what I may have to say will tend to show that while the field of each specialty in medical practice is more or less well defined, still there is common ground, on which all may meet. And I am quite sure, moreover, whatever may have been the feeling in the past, and whatever the repugnance on the part of the medical professsion to a recognition of the claims of dentistry to a place as a department of surgery, that now there is a growing recognition of the kinship between the two; and indeed, my presence here to-night, in the character of essayist, is a candid recognition on your part of the claims we may have, and that however narrow the field that we (the dentists) occupy, we have not failed entirely to develop some truths worthy of public recognition; is a proof that you feel that we know something which you wish to hear.

But is this a fact? What claim has dentistry to recognition at your hands as a specialty of medicine, and what proof is there in the limits set for it by mutual consent—bounds by tacit agreement—that dentistry has claim to fellowship with those who occupy the broader field of which you are representatives?

Is it a fact that we are at least *cousins*, if not *brothers?* or are we simply clever artisans, skilful mechanicians, worthy of praise, but only deserving of classification with the manufacturers of artificial limbs, of trusses, of glass-eyes, and wigs?

Of late there has risen in the ranks of the dental profession an earnest desire for some more complete recognition

at your hands than has been our fortune to have accorded us. There are now not a few among us who have boldly claimed their right to a place among the M. D's., and who have met, in their advances or strivings for advancement, severe rebuffs. They have said that inasmuch as dentistry is a specialty of medicine, that they as specialists were quite as good as the other specialists—the oculists, aurists, &c., and harsh words have been uttered, and recriminations indulged in because the doctors of medicine would not take them by the hand and call them brothers; forgetful of the fact that true merit in the long run is always recognized wherever found, they have rather striven to push themselves. And, on the other hand, I fear that the tendency on the part of the older and more aristocratic profession to "turn the cold shoulder" to our advances, is nearly as marked as the fault—shall I call it presumption?—on the other hand.

But, I infer that a better state of things now exists, a more generous feeling, on all sides. And I should do the profession of which you are honored members a great injustice did I suppose for an instant that you were intolerant of any one who had contributions, no matter how meagre, to offer—contributions which would tend to mitigate the world's suffering.

I have asked the question whether or not dentistry is anything more than a highly developed mechanical pursuit, and whether those who pursue it can justly claim any higher position than that of clever manipulators. Are we deserving of higher rank than the artificers of wooden legs, &c?

If the relief of human suffering be any title to admission to the ranks of the medical profession; if the fact that the woes of humanity are mitigated, relieved, cured, is a title to such rank, then certainly the dentist should claim a good deal. For in no department of surgery or medicine are results so certain, operations so successful, relief so abiding, as in dentistry. But I take it that such claims, though fully admitted, hardly entitle us to a place in the world's estima-

tion with you, unless it is shown that such relief as is claimed to be given is the outcome of pathological knowledge. Unless I show that the foundations, on which the superstructure of our surgery and theory is builded, are laid bro d and deep in as thorough knowledge of the conditions of the human body in health and disease as is possessed by you, I shall fail to make good the claim which certain of my brethren make to relationship.

And here I candidly confess that so far as my knowledge of my own profession goes, its members are sadly at fault. The fact that our calling is largely mechanical is admitted; and this fact alone is an explanation, in part at least, of the lack of broad culture and of extensive physiological and pathological research. The man whose daily pursuits compel him to manual tr. ining rather than to investigation into the causes of things, whose constant occupation consists in handling instruments, and in cultivating touch and tactual dexterity, and whose success depends upon his accomplishments in this direction—such a man, however he may desire a broader, general development, can scarcely attain it, seeing that his daily life constantly draws him away from it. Routine is unfavorable to breadth. Then, too, many who pursue dentistry, elect their calling because of real or fancied talents of hand-craft.

Still, I can but feel that the claim to recognition has its force, if properly viewed. The cry of suffering humanity for relief from pain, how it appeals to every sympathy, how it moves our hearts, and stirs our emotions! The appealing cry for help, for relief from distress and anguish, has been, is, and must be the moving impulse ot the healing art. He who came into the world to seek and save lost souls, never forgot for a moment that the souls had bodies (you see, gentlemen, that I am old-fashioned in my beliefs,) and it is hard to decide in reading the story of that wonderful life whether he most pitied the degraded mind and soul, or the degraded and suffering body. The public, who failed utterly to recognize his spiritual mission, gladly availed

themselves of his powers as a physician, and in no case did he turn one away. Pitiful and tender, he "bore the griefs and carried the sorrows of many." And so it is that in all ages the noblest type of manhood is that which devotes itself earnestly and heartily to the work of alleviating the sufferings of its fellow-men; and he who does not feel this is unfit for the physician's office and function.

Such office and function is that of the dentist in large degree, and whether the means taken be those of scientific study of cause and effect—the causation of disease and the effect of remedies—or whether by a simple mechanical operation upon the decayed tooth-structure, pain is prevented—in any event, he who either mitigates the sufferings of his fellows or prevents them, is deserving of reward and honor.

While I have alluded to the fact that the peculiarity of the practice of dentistry tends to largely develop the mechanical skill resident in a man, and that this fact of its being largely mechanical in its nature hinders the breadth which might arise, did the relations of cause and effect require closer study on his part, I do not mean to allow myself to be understood as saying or inferring that we have not among us men who can lay claim to the title of "scientists." For I tell you that dental literature exhibits no mean record of things within its scope, and that the investigations of some of those who have been and are now at work in histological research, are worthy of classification with the best efforts of the best men of the day. That for accuracy and breadth of physiological culture, for acuteness of diagnosis, for skilled application of therapeutical means, we have men who are the peers of any in the regular practice of medicine.

But with all this, I am free to say here for my profession, and representing as I do in part the oldest dental college in the world, that the masses of our profession would be little profited by being taken into association with yours. Poorly cultivated, restricted, narrow, with the conceit which so

commonly goes hand in hand with ignorance, they are yet a long way from deserving more than the term "clever mechanics;" and this too in spite of colleges and teaching. "Is dentistry a liberal profession?" was the title of a very thoughtful essay by one of the thinkers of that profession, and it suggests much of sadness to me. Ignorant of much, versed in little, clever manipulators, the average dentist is in need of much development. Whether those who come to our colleges as raw material are inferior in point of talent to those who crowd the amphitheatres of your medical schools, I am not in a position to judge; but I hear from those who are judges that ours are quite equal—some say they are superior—to the other. And indeed I see no reason why, in consideration of the fact that such material is drawn from all over the country, there should be a difference in favor of the medical classes. Certainly our students are nothing to boast of. Are yours?

But I only slowly approach the subject, and must recall the fact of the shortness of time.

What have we done as dentists? on what do we base our claims to relationship to you?

What has dentistry done? I have not strength to tell, and certainly you have not time to listen to it all. But I may, very briefly, outline some of the work which, within the past fifty years, has been accomplished.

The work of surgery cannot be over-estimated, (the benefits conferred on mankind by the use of drugs is often called in question,) but of *surgery* no one can hesitate to say that the greatest boons conferred on suffering human beings have come through a knowledge of how to relieve pain and arrest disease by operations. It is hard to say how it came to pass that the work of removing aching teeth fell into the hands of persons outside the medical profession; but it is certain that until the last fifty years or less, the barber, the blacksmith, the druggist, were the extractors of teeth. Probably it was due to the fact that this operation was looked upon as purely mechanical,

requiring only strength of wrist. And until about the period I mention, the operation in question was the only one called upon to be performed. Since then the work stands about thus: Artificial teeth, rivalling in color, shade, tone, shape, &c., more nearly the work of nature than anything in art, save and except artificial flowers, and taking the place very fairly of the natural organs as agents of mastication, have been brought to a perfection which demands little improvement. The ancient crone, with "nose resting on chin like a staff," the snaggle-tooth disfigured man and woman has disappeared, and youth and beauty have taken the place of decrepitude, in appearance. Teeth are filled, abscesses cured, chronic fistulous discharges through the gums and cheeks healed; exposed and aching pulps of teeth are capped and rendered healthy; teeth extracted and replanted with success; artificial teeth grafted on natural roots—in a word, restoration taking the place of ruin. It is certain that in no department of surgery can success be so certainly predicted as in dentistry.

In accuracy of diagnosis, in skill in therapeutic treatment, in a perfect knowledge of the conditions of disease falling into their hands, and of skilful application of remedies, I am sure that those who are familiar with the practice of the *best* dentists will agree with me that they are the peers in their specialty with the best surgeons, and produce results as beneficial to the human race.

How much recognition should dentists claim, and what should you be willing to accord them? I do not think that any dentist should ask for more than this at the hands of the general practitioner; I do think that the intelligent and cultivated dentist is entitled to this much:

(1.) In all lesions of the trifacial, and all diseases arising therefrom, the dentist should be consulted, to see if his special knowledge will avail in making a diagnosis.

(2.) In all carious conditions of the bones of the face, and troubles arising therefrom.

(3.) In nervous diseases, where there is any probability,

or even possibility, of involvment of nerve centres through the trifacial.

(4.) In digestive disorders, where even remote suspicion rests upon the teeth.

I do not think that the dentist is called upon, or should be expected to perform large surgical operations, upon the face or mouth, as the removal of maxillæ, amputation of the tongue, staphylorrhaphy, &c., although I am aware that such claims are made by some of my brethren. Nor do I believe that he should, as a rule, prescribe for general diseased conditions. But he should, on the other hand, be able at least to *suspect* troubles which, distantly located, express themselves in facial reflex maladies, and refer his patients to you. I here express the opinion often expressed to my students, that as I feel that you, gentlemen, are trenching on my ground when you attempt the extraction of teeth, so we should be overstepping our limits in playing the role of the general practitioner. But further, I do teach and enforce always the doctrine, and emphasize it with all the earnestness I have, that dentists should *know*, fully and deeply, the fundamental principles of physiology and pathology, and should be able, if occasion demands, to give advice in cases of emergency. The spectacle of the dentist in case of accident or untoward manifestations from an anæsthetic, running off after the doctor of medicine, unable himself to apply even the simpler remedies used in such cases, is to me a disgrace and a shame. In all such emergencies he should be able to meet them, or else discard the agents which render such accidents liable.

Should dentists be required to hold medical diplomas, and should the study of medicine be a condition precedent to the study of the other? I think not, at least at present. The curriculum of a dental school furnishes a dentist with a fair outfit, and we claim to teach all of anatomy, physiology, &c., that is needful. But I do not discourage, but encourage, my young men to study medicine, if only for the broadening effect. Some of the best men in the dental

profession have come into it from the medical, and I leave it to you to judge whether they stepped up or down.

Finally, as I earnestly advise my brethren of the dental profession to cultivate the acquaintance of the physicians, so I advise you to cultivate the acquaintance of your dentist. Draw him out, inspire him with zeal, not only to do good work, but to *develop* himself. Let him see that you feel him entitled, as a worker for suffering mortals, to recognition in some degree to brotherhood. Let him feel that you appreciate what he *does* know, and encourage him to larger growth. If he needs developing (and most of us do,) help him. And have your dental mate; if possible, send your patients, not to some dentist, but to *the* dentist whom you endorse, or fraternize with. If you help him, possibly he may help you.

And more, I suggest that you look into dental literature. You may see some things which will surprise you. Original research, comprehensive judgment, acute analysis, superior thinking powers—all may be seen in larger measure than you possibly think. There are no more earnest students anywhere than some of our men, and fifty years of study is not and cannot be fruitless of result. Ten colleges, six or seven journals, &c., annual conventions, State and national, show that earnest men are at work; and earnest men are the need of the times.—*Southern Clinic.*

ARTICLE V.

Corundum.

Within the past two years, the attention of the scientific world, especially, has been directed to the above mineral, from the fact of its discovery, in place, in this country. A number of communications on the subject have been published by prominent men, the most important of which are those from Profs. Genth and Lesley, of the University of Pennsylvania; Prof. Charles U. Shepard, of Amherst College; Dr. A. C. Hamlin, of Bangor; and Dr. J. Lawrence

Smith, of Kentucky. These papers are mostly of value to men of scientific pursuits. Our readers will be interested in more detailed information as to this mineral, and the locality where first in the history of the world it is legitimately mined.

Although corundum has been in use, as an abrasive, from an early age, and under various names, it was not until near the commencement of the present century that its localities were found and examined by scholars, and its true place in mineralogy determined. For thousands of years the Chinese had used it, under the name of adamantine spar; the Persians, as Armenian whetstone; the Hindoos, as corundum; and the Egyptians, as the iron-stone of the Red Sea. The natives of these countries had gathered it from the beds of mountain-torrents, or in the alluvium of the valleys, after the annual rains had washed it down, freeing it, in the transit, from its associate minerals and impurities; but no attempt at its legitimate mining had ever been made until within the past two years, in the United States, in the State of North Carolina. The mineral, from whatever locality it comes, is now known in science and commerce as corundum —the name given it by the Hindoos, and meaning cinnamon-stone, from the resemblance in color to that article, of the variety found in their country. It is pure crystallized clay or alumina, and is the next hardest substance in Nature to the diamond, reducing to powder all substances save that gem.

Until the researches of Hauy, the distinguished French *savant*, about the commencement of this century, the three forms of alumnia, known as sapphire, corundum, and emery, were supposed to be distinct species. His analysis made them three varieties of one species; a decision confirmed by chemists since, and now universally accepted. The earliest extended reference to corundum, of any value to science or trade, appears in a joint paper by Count Bournon, of Paris, and Sir Charles Greville, of London, prepared for the Royal Historical Society of London, in 1798; which

was soon followed by a more careful mineralogical treatise, by the first-named scientist, prepared by him for the same society. Sir Charles Greville's observations were based on data collected by him at a point in the alluvium in India where the natives had for ages gathered the mineral. Those by Count Bournon were the results of his studies of the mineral at Paris, from specimens brought him from several points, especially in India and Ceylon. At a later date, we have interesting information from Sir Alexander Burnes as to the celebrated ruby locality of ancient Bactria; and from Sir James Tennent and Sir Samuel Baker, as to the famed sapphire districts of Ceylon, which were carefully examined by them during a protracted residence there. A most interesting account of these localities was also published in the *Ceylon Observer* for June, 1855, by Mr. William Stewart, of Colombo. In the *American Journal of Science* for the years 1850, 1851, and 1866, are three papers on granular corundum, or emery, by Dr. J. Lawrence Smith, of Kentucky; the first two descriptive of the emeries of Asia Minor, and localities on the islands of the Ægean Sea; the third, on the mine in Western Massachusetts, known as the Chester mine. These papers are of the first importance in all questions concerning the commercial emeries of our own or foreign countries, and cover the ground of investigation to the date of the North Carolina discovery, and the communications thereon, enumerated in the opening paragraph of this article.

Up to the date of 1871, corundum, or its gems, had never been found *in situ*. Both were looked for in mountain-torrents, or beds of gravel at their base. Emery had for many years been mined in the islands of the Ægean Sea, but had not been scientifically studied in position, until the researches of Dr. Smith, alluded to; since which date, however, it has been found in place at various points in our own and other lands. About the year 1800 it became known that corundum existed, in small quantities, all along the mountain-line of sea-coast, from Maine to Georgia; and,

twenty-five years since, it was found in boulders, in considerable quantities, in Southeastern Pennsylvania. Near the same time a large fragment of massive sapphire was picked up in Western North Carolina, and elicited much attention from mineralogists; but, careful further search in the locality for it being fruitless, there has been since but little effort to find it at any point in the Appalachian range. Whatever effort was made, however, settled the point that corundum existed, in considerable quantity and different degrees of purity, at twenty-five or more localities scattered from New York to Northern Alabama.

In the spring of 1871 Colonel C. W. Jenks, of St. Louis, being in want of an abrasive more powerful than Naxos emery, started out into the mountains of Tennessee and North Carolina in search of corundum, in sufficient quantity to mine profitably. From many localities where the mineral showed itself, he selected one near the head-waters of the Tennessee, in Southwestern North Carolina, nine miles east from Franklin, the county-seat of Macon, and commenced his work. A large price was paid for mountain-land, at a site where the mineral had been found on the surface in considerable quantities. A canal was cut from a mountain near, that furnished hydraulic power; a gang of a dozen mountaineers were engaged as miners, and ground was first broken in the search for corundum in position. There being no precedent or guide in mining for corundum, experience was the teacher, and a dear one, for nearly a year of energetic and toilsome exploration. The question to be solved was, whether the mineral in any quantity lay beneath the surface, upon which, all former supplies had been gathered; and, if so, whether it would show itself in bowlders, segregated masses, pockets, or true veins. The country rock is granite and gneiss; the spur or ridge, where the mineral showed itself, a trap of chromiferous serpentine, or chrysolite formation. The strata developed is chrysolite rock, mixed with anthophyllite—a layer of micaceous rock—a seam of chalcedony—a stratum of chlo-

rite, of the variety ripidolite, and a gangue of the same, which proves to be the usual matrix of the corundum. Eight months of hard labor settled the question that corundum was there in immense quantity, and that it would be found in veins varying, as is usual in other minerals, from a few inches to several feet in width. These should be termed, what they are, embedded veins, between hanging and foot walls of chrysolite, the gangue being of various minerals—generally, however, of ripidolite, as stated; but sometimes that mineral running into mica schist, talc, spinel, jefferesite, and feldspar. In one of these veins, in a pocket of jefferesite—a golden-yellow mica—there was found much the largest and finest crystal of corundum known, of a fine sapphire and ruby color, weighing 312 pounds, and now the property of Prof. Shepard, of Amherst College. This unique specimen would undoubtedly command one thousand dollars, were it for sale, various collectors of Europe being anxious for its possession. Corundum from this mine proves to be of excellent quality. Taking sapphire as the standard at 100, the product of the mine has a power of from 90 to 97 as an abrasive, while that of the best emery, the Naxos, numbers from 40 to 57. The veins, five of which have been opened, run northeast and southwest, dip under at an angle of 45°, and are, at the deepest point reached, seven to ten feet wide. There is also remarkable association of other interesting minerals of tourmaline, spinel, zerkon, etc., while the corundum itself shows almost every shade of color from white to black. It is also remarkable that the mine contains all the varieties in color, texture, and crystallization, found in the aggregate corundum localities of the globe. Association of two colors in the same crystal is spoken of by the best writers as a somewhat rare matter, even in Ceylon. One crystal was shown us from this mine, weighing two pounds, with blue, ruby, pink, yellow, and green colors of great brilliancy and transparency; and a small hand-collection, which contained a variety in form, perfection, and purity of color, not equaled by any collection of

corundum in the known cabinets of Europe—for from no other locality have such specimens been found, excepting in the perfect gems from Ceylon and Burmah.

We now come to the most interesting feature of the mine. It was natural that, with so much of purity in the amorphous mineral, and perfection and beauty in the crystals found with it, Colonel Jenks should conclude that there might be gems in the mine. But from no quarter but his own observations did he get any encouragement in this direction. The best English authority on gems and their localities, Prof. King, of Trinity College, Cambridge, says: "The corundum gems have never been found in place, but always in the alluvial or sands of the rivers." After eight years of residence in Ceylon, the source from which the best sapphires of the world have come from an early period, and much acquaintance with the best gem-localities of the island, Sir Samuel Baker remarks: "The sapphires were created in the peculiar secondary formation, where they are always found, which is composed of water-worn pebbles, in a conglomerate of blue and white clay, buried ten to twenty feet beneath the surface of the valleys," etc. This was the opinion of Buffon, and other eminent scholars. The ruby localities of Bactria, visited by Sir Alexander Burnes, are said by him to be of similar character. Sir James Tennent, in his elaborate work upon Ceylon, expresses similar views, yet ventures the opinion, from a survey of the whole subject, that gems might be found in place in the island. He says, in confirmation of this view, that he saw in one of the mountain-ranges, "a stratum of gray granite, with iron pyrites and molybdena, which contained great quantities of very small rubies." Whether he ascertained the nature of the gems he calls rubies by analysis, or only from casual observation, he does not say; but garnets of great beauty so often occur in such a matrix that it would not be safe to rely on those stones he saw—unless analyzed —as the ruby corundum. Seeking information from a later, and perhaps we are justified in saying, on this matter,

the most eminent authority, that of Dr. J. Lawrence Smith, of Kentucky, he says, in substance: " The gems of corundum cannot be expected to appear where the amorphous masses of the mineral abound, and, *vice versa*, that corundum, for commerce, will not be found with the precious gems," etc., his conclusion being based upon " the diverse composition of the two forms of the mineral, shown by analysis, and which would require for their formation different geological and mineralogical conditions," etc.

Not dismayed by this array of scientific opinion and experience, however, Colonel Jenks made careful examination of the material as it came from the miners' hands, and the results led him to give them special instructions as to the nature of their operations. As the geodes in the formation of silica have been found to contain the finest quartz crystals, he hoped to find in the mine something of the same character, of alumina. He was rewarded by one or more large pockets of geodes of dark green chlorite, from the size of a walnut to that of a fifty-pound shot, within which were one or more crystals of corundum, sometimes blue and white, and, in few instances, of ruby color. None of them were entirely transparent; none of the geodes had cavities, as is the case in those of quartz formation; yet the prospect in this direction is most promising. The result thus far, however, is most encouraging in the rock-strata itself, which is the proper gangue of the corundum. With the hundred tons the mine has yielded for abrasive purposes, the workmen have taken from the place of their birth—a solid, undisturbed matrix of ripidolite—beautiful specimens of the nine corundum gems known by lapidaries by the prefix " Oriental," because of their superior hardness and brilliancy; and also because those of this character, in lustre and composition, were first brought from the East. These are known by name as Oriental sapphire, ruby, emerald, topaz, asteria, amethyst, chatoyant, girasol, and white or colorless sapphire, this last often used in place of the diamond. The general characteristics of these stones, such as

color, lustre, hardness, etc., are, by the first lapidaries of this country and Europe, pronounced as not inferior to those of the best localities of the Old World. One of them was sold to a lapidary of Amsterdam, Holland, for $4,000. Others of much beauty have been cut, and are owned in this country and Europe. In this connection it is of value to note that Count Bournon, during his investigations, made a list and analysis of the associate minerals found, *in transitu*, with the sapphires of Ceylon. Colonel Jenks has had a similar list and examination made of those found *in situ* with the gems of his mine. All the minerals found in the Ceylon gem-deposits are found in the North Carolina locality.

There can be no doubt, therefore, that Colonel Jenks has made the discovery, in America, of the most precious gems next to the diamond, where they have been sought for in vain elsewhere, *in a matrix of solid rock-formation*. We look for further interesting developments at this unique and thus far unparalleled alumina deposit.—*Popular Science Monthly.*

ARTICLE VI.

Applications of Celluloid.

An excellent illustration of the industrial and commercial benefits that may rise from new products, whether gleaned from the unused stores of nature or created by the skill of the inventor, is furnished by the wide and various utility of the compound of cellulose and camphor known as celluloid. Though scarcely ten years have passed since the Hyatt brothers suspected that this compound might be used profitably in the arts, and only five years since they began to manufacture it successfully, it has become the basis of several thriving industries, and novel applications of it are being made almost daily.

As now made celluloid is a composition of fine tissue paper and gum camphor, treated with chemicals by a pat-

ented process. When crude it looks like a transparent gum, and its color is a light yellow brown. It can be made as hard as ivory, but is always elastic, and can be readily moulded into every conceivable form. With equal ease it can be colored in any tint desired, the dye running through the entire substance, and being, therefore, ineffaceable.

A writer for the *Evening Post* has taken pains to collect a large amount of information concerning the manufacture and use of this material; and wide as the range of its application has become, the business of preparing the crude material and shaping it into novel and useful forms is thought to be only in its infancy. According to the *Post* writer, all the celluloid used is made by a single company, having factories at Newark, N. J., who sell the crude material to the parties undertaking the production of finished goods. No one can buy it unless the producing company decides to give him a license, which is granted only for the purpose of making some new article that will not interfere with the trade of the companies already licensed. A number of large corporations are now engaged in the various branches of manufacture for which celluloid can be employed. Most of these have their factories in Newark, but there is one large establishment in Center street, this city.

The cost of the crude article to the buyers is regulated by the producing company according to the use to be made of it and the competition met with in other materials. For instance, \$4 or \$5 per pound are charged for celluloid which is to be made into jewelry, while only \$2 are charged if it is designed for umbrella handles, though there is no difference in the quality of the substance.

As a close imitation of ivory, celluloid has made great inroads in the business of the ivory manufacturers. Its makers assert that in durability it is much superior to ivory, as it sustains hard knocks without injury, and is not discolored by age or use. Great quantities of it are used for piano and organ keys, to the manufacture of which one company is devoted.

Billiard balls are made of celluloid at half the price of ivory, and are said to be equally elastic, while more durable. Large amounts are used for combs, for the backs of brushes and hand mirrors, and toilet articles; a fine tooth comb made of celluloid is twenty-five per cent cheaper than ivory, while in large pieces, such as the backs of hand glasses, the difference in price is enormous. Among many other articles in which celluloid takes the place of ivory or India-rubber are whip, cane, and umbrella handles, every kind of harness trimmings, foot rules, chessmen, and the handles of knives and forks. Its use in cutlery is said to be especially desirable, as it is not cracked or discolored by hot water.

India-rubber, as a general rule, holds its ground against celluloid, as the latter cannot be sold so cheaply. The celluloid is said to be much more durable, however, and it is superior for pencil cases, jewelry, etc., where gold mountings are used, as it does not tarnish the metal, whereas the sulphur in India-rubber tarnishes gold which is less than eighteen carats fine. The freedom of celluloid from sulphur, and the natural flesh color which can be imparted to it, have caused it to be extensively substituted for India-rubber in the manufacture of dental blanks, or the gums and other attachments of artificial teeth.

Celluloid can be mottled so as to imitate the finest tortoise shell, and its elasticity renders it much less liable to breakage. In this form it is used, like the imitation ivory, for combs, card cases, cigar cases, match boxes, pocket books, napkin rings, jewelry, and all sorts of fancy articles. The substance is employed for similar purposes as a good imitation of malachite and also of amber. It is made into mouth pieces for pipes, cigar holders, and musical instruments, and is used as the material of flutes, flageolets, and drumsticks. For drumheads it is said to be superior to parchment, as it is not affected by moisture in the atmosphere.

As a substitute for porcelain, celluloid is used for the heads of dolls, which can be hammered against a hard floor

without danger of fracture. Beautiful jewelry is made of it in imitation of the most elaborately carved coral, reproducing all the shades of the genuine article.

One of the large manufacturing companies is employed exclusively in the making of optical goods, using celluloid in place of tortoise shell, jet, etc., for the frames of spectacles, eye glasses, and opera glasses. The material is extensively used for shoe tips, protecting the toe as well as metal tips, and having the appearance of patent leather. By shoemakers it is also used for insoles. Large quantities of thimbles are made of it, and it is said to be the best material known for emery wheels and knife sharpeners. As a ground for paintings, celluloid has all the advantages of ivory, and photographs can be taken on it which are alleged to be superior to ivorytypes.

Within the last year and a half another branch of celluloid manufacture has been developed which promises to reach enormous proportions. This is the use of celluloid as a substitute for linen or paper in the making of shirt cuffs, collars, etc. It has the appearance of well starched linen, is sufficiently light and flexible, does not wrinkle, is not affected by perspiration, and can be worn for months without injury. It becomes soiled much less readily than linen, and when dirty is quickly cleaned by the application of a little soap and water with a sponge or rag. For travellers and for wear in hot weather this celluloid linen is especially convenient. It has lately been much improved by the introduction of real linen between two thicknesses of celluloid. Shirt fronts have been made of it, as well as cuffs and collars, and it is believed that these will prove equally desirable.

Celluloid has been experimented with as a material for neckties, and although the trials have not yet been very satisfactory, it is thought that they will eventually be successful. For hat bands and hat sweat bands it is a trifle more expensive than the materials commonly used, but it is said to be better, as it does not become rusty or greasy. It has also been used lately for watch-cases.

There is a large export trade in celluloid articles to Cuba and South America, and this is constantly increasing. They are not sent to Europe, as the right to manufacture and sell them there has been sold to a foreign company, which has a factory in France.—*Scientific American.*

ARTICLE VII.

Recent Experiments with "Laughing Gas."

Protoxide of nitrogen, or "laughing gas," the anæsthetic properties of which were discovered by Sir Humphry Davy, is used at the present time by a very large number of dentists for producing insensibility during the process of extracting teeth. But this insensibility cannot be prolonged for any great length of time owing to the fact that asphyxia is liable to supervene. For this reason, American surgeon dentists have succeeded in performing lengthy operations by means of this gas, only in producing short, but repeated anæsthesia, separated by intervals of sensibility. The reason of this is that anæsthesia can only be produced by making the patient respire pure protoxide of nitrogen, without any admixture of air; the result is that asphyxia is a concomitant of anæsthesia. The celebrated physiologist, M. Paul Bert, has recently been experimenting on this subject with a view of discovering some means of overcoming the latter difficulty, and obtaining from laughing gas anæsthetic effects that may be indefinitely prolonged, while at the same time they shall be absolutely free from any dangers arising from asphyxia. The results of his investigations were presented in a paper read before the French Academy of Sciences on the 11th of November. It is proper to remark here that M. Bert's experiments were made upon animals solely. The fact that protoxide of nitrogen must be administered in a pure state signifies that the tension of this gas, in order that it may penetrate in sufficient quantity into the organism, must be equal to one atmosphere. In order to obtain it, under the normal pres-

sure, it is necessary that the gas be in the proportion of 100 per cent. But if we suppose the patient placed in an apparatus where the pressure may be carried up to two atmospheres, we shall be able to submit him to the desired tension in making him respire a mixture of 50 per cent protoxide of nitrogen and 50 per cent air; we ought then to obtain anæsthesia, while at the same time we maintain the normal quantity of oxygen in the blood, and consequently preserve the normal conditions of respiration. And this is just what happens. In M. Bert's experiments he tells us that he entered an apparatus constructed for the purpose, and there under an increase of pressure of one-fifth of an atmosphere he caused a dog to respire a mixture of five-sixths of protoxide of nitrogen and one-sixth oxygen —a mixture in which, as may be seen, the tension of the laughing gas is precisely equal to one atmosphere. Under such conditions the animal fell, in one or two minutes, into a complete state of anæsthesia, and had it not been for its respiration, which was executed with perfect regularity, it would have seemed to be dead. This state was found to last for an entire hour without the least change; the blood preserving its red color, the heart its regular beats, and the temperature its normal degree. During this whole period, all those phenomena of life called vegetative remained intact, while all those of animal life were absolutely annulled. When the bag containing the mixed gases was at length removed, the animal was observed, at the third or fourth inspiration of pure air, to suddenly recover its sensibility, will, intelligence, and natural friskiness. This rapid return to a normal state, so different from what is observed on the administration of chloroform, is due to the fact that laughing gas does not, like the latter, form chemical combinations in the organism, but is simply dissolved in the blood. As soon as none of it longer exists in the inspired air, it rapidly escapes from the system, through the lungs, as analysis of the blood have proved. As a result of many very careful experiments, M. Bert states that he feels himself authorized

to maintain that the use of protoxide of hydrogen is perfectly harmless; and furthermore, he strongly recommends surgeons to use this gas under pressure, with a view of obtaining its anæsthetic effects as long as possible. By measuring, as above indicated, the barometric pressure and the centesimal composition of the mixture, so as to have for the protoxide of nitrogen the tension of the atmosphere, and for the oxygen at least the normal tension in the air, they will obtain a state of insensibility and a muscular resolution as complete as they desire, with an immediate return to sensibility and perfect state of well being, on removal of the anæsthetic agent. The sole difficulty in the way relates to the apparatus necessary to make the application of the anæsthetic under tension. For army purposes this is insuperable, but in cities the difficulty is easily remedied, for in such places compressed air baths are always obtainable, and in fact might be easily constructed in the surgical wards of hospitals at small expense. This, however, is a matter of secondary consequence, the solution of which remains with surgeons themselves; to whom, as well, it belongs to resolve the numerous questions of detail that always accompany the application of a new therapeutic agent.—*Scientific American.*

ARTICLE VIII.

Indiana Dental Law.

The following is a copy of the law regulating the practice of dentistry in the State of Indiana, enacted by the Legislature of that State at its recent session.

SEC. 1. *Be it enacted, by the General Assembly of the State of Indiana,* That it shall be unlawful for any one to practice dentistry for a fee or reward, in the State of Indiana, without having received a diploma from a Dental College, duly incorporated under the laws of this or some other State of the United States, or a certificate of qualification, issued by a Board of Examiners to be appointed by

the Indiana State Dental Association: *Provided*, That nothing in this act shall apply to any one engaged in the practice of dentistry in this State at the time of the passage of this act.

SEC. 2. A Board of Examiners, consisting of five practicing dentists, shall be appointed by said State Dental Association, according to its by-laws, whose duty it shall be to meet annually at the time and place of meeting of the said State Association, or oftener, at the call of three members of said Board, at such time and place as may be designated in said call, and to examine all who pass a satisfactory examination.

SEC. 3. Any applicant who furnishes satisfactory proof of having heen engaged in the reputable practice of dentistry for ten consecutive years immediately preceding the time of their application, shall be examined only in practical dentistry—operative and mechanical; all others shall be examined in Anatomy, Physiology, Pathology, Therapeutics, Chemistry, and the theory and practice of surgical and mechanical dentistry.

SEC. 4. All certificates issued under the provisions of this act shall be signed by all the members of said Board of Examiners, and have the seal of the Indiana State Dental Association affixed, and shall be prima facie evidence of the right of the holder to practice under this act, which right it shall be incumbent on the holder to prove in all prosecutions under the same.

SEC. 5. Any member of the Board of Examiners may grant a permit to practice until the next meeting of the board, but such permit shall be valid only until said next meeting, and in no case be extended or renewed.

SEC. 6. Any person violating the provisions of this act shall be liable to prosecution, upon complaint of any citizen of this State, before a Justice of the Peace, or in any Superior Court of record, by indictment or information, in the county where the offense is committed; and upon conviction, shall be fined in any sum not less than fifty nor

more than one hundred dollars for each offense: *Provided*, Nothing in this act shall be so construed as to prevent physicians or surgeons extracting teeth; and all fines so collected, shall belong to the common school fund of the county where assessed.

SEC. 7. To provide a fund to carry out and enforce the provisions of this act, the Board of Examiners shall, before examination, collect from each applicant, the sum of twenty-five dollars; any portion of which there may be remaining after paying necessary expenses attending such examination shall be paid into the treasury of the said State Association, to be used for the purpose for which said fund is hereby created.

SEC. 8. Three members of the Board of Examiners shall constitute a quorum, and all questions before them shall be decided by a vote of the majority of those present; and should there not be a quorom present on the day of meeting, those present may meet and adjourn from day to day, until there is a quorum present.

SEC. 9. The Board shall receive, out of the fund created by this act, such compensation for their services as the by-laws of said Dental Association may provide.

SEC. 10. This act shall be in force from and after its passage, publication and circulation in the several counties of the State.

ARTICLE IX.

DENTAL ASSOCIATIONS.

Virginia State Dental Association.

At the last annual meeting of the Virginia Dental Association it was determined to make a "new departure," changing the time and place of holding the annual meeting, hoping thereby to secure a larger attendance and more enthusiasm than has marked our meetings for several years past.

In accordance with this determination, the regular annual meeting for this year will be held in the city of Charlottesville, Tuesday, August 19th, at 10 o'clock A. M.

It is hoped that every member of the Association will use his best endeavors to be present, and lend his aid in making the meeting interesting and profitable.

All members of the profession, not only in Virginia, but in sister States, whether members of the Society or not, are cordially invited to meet with us and take part in our discussions.

I most earnestly request that each member of the several standing committees will prepare an individual report, and not depend upon the other members of the committee to do the duty for him. This it will be seen the Constitution of the Society requires; and it is only by faithfulness in this matter that we can expect to accomplish the objects of our meeting. It is hoped that those who find themselves unable to attend in person, will forward their papers to Dr. W. E. Norris, Charlottesville, in time to be read at the meeting.

Past experience has shown that when the committees are announced early in the year, the members procrastinate and forget the appointment. The issuing of this notice has been delayed, in the hope that those appointed on the committees would see the necessity for setting to work at once, to have their reports ready at the time of meeting.

L. M. Cowardin, *Corresponding Secretary.*
J. Hall Moore, *President.*

National Dental Association.

The Eleventh Annual Meeting of this Association, (late Southern,") will be held in Augusta, Georgia, commencing on the 2nd Tuesday in July, 1879, at 10 A. M.

It is expected that the members of the Georgia, South Carolina and North Carolina State Dental Societies will be present, and a cordial invitation is extended to the profession generally.

OFFICERS.

President.—Prof. F. J. S. Gorgas, Baltimore, Md.

1st Vice President.—Dr. L. D. Carpenter, Atlanta, Ga.

2nd Vice President.—Dr. J. R. Walker, New Orleans, La.

3rd Vice President.—Dr. John G. Wayt, Richmond, Va.

Cor. Secretary.—Dr. A. C. Ford, Atlanta, Ga.

Rec. Secretary.—Dr. E. S. Chisholm, Tuscaloosa, Ala.

Treasurer.—Dr. H. A. Lowrance, Athens, Ga.

Executive Committee.—Drs. W. C. Wardlaw, G. H. Winkler, of Augusta; G. W. H. Whitaker, Sandersville, Ga.

The members of the different Standing Committees are earnestly requested to be present, and present papers on the subjects designated. Proper arrangements will be made for reduction of Rail Road fares, &c., by the Executive Committee.

E. S. CHISHOLM,
Recording Secretary.

South Carolina State Dental Association.

The Ninth Annual Meeting of the South Carolina State Dental Association will be held in the office of the President, J. B. Patrick, D. D. S., July 7th, 1879, at 10 A. M., in Charleston, S. C. That afternoon the Association will adjourn to meet in joint session with the Southern Dental Association and Georgia Dental Society, next morning, July 8th, at Augusta, Ga.

All respectable dentists are informed, that it is their privilege and duty to attend one or both of these meetings. Every inducement which can, will be afforded the profession.

The State Board of Dental Examiners will meet at Charleston, in the office of Dr. J. B. Patrick, July 7th, 1879, at 10 A. M.

Candidates for the practice of dentistry in South Carolina must apply, at or before that time, to Dr. W. S. Brown, of Charleston.

The attention of graduates in dentistry subsequent to February 23, 1875, is called to Sections 3rd and 7th of an Act of the General Assembly, to regulate the practice of dentistry in this State. G. F. S. Wright.

Rec. Secretary, Columbia S. C.

American Dental Association.

The Local Committee of the American Dental Association report by their Chairman, Dr. G. L. Field, the following provisions for the Nineteenth Annual Session of this Association, to be held at Niagara Falls, August 5th, 6th, 7th, and 8th, 1879.

The Pavilion in Prospect Park has been engaged for the Meetings. Each person attending will be charged one entrance, (25 cents,) to the Park for the Session.

Hotel charges reduced to $3,00 per day at the Cataract House and International Hotel. Half rates to all places of interest in the vicinity. One ticket good for the Session. Certificates entitling members to reduced fares over the Great Western and Wabash Rail Roads may be obtained of Dr. George L. Field, Detroit, Michigan, previous to August 1st. Reduced rates may be had over the Erie and New York Central Rail Roads after July 15th, of Dr. F. M. Odell, No. 7 West 38th Street, New York.

Tickets will be issued over the Cincinnati Hamilton and Dayton and Canada Southern Rail Roads, from Cincinnati to Niagara Falls and return for $10,00.

Thomas Fillebrown,

Ch'n 1st Div. Ex. Committee.

Georgia State Dental Society.

The Eleventh Annual Session of the Georgia State Dental Society will be held in the city of Augusta, Ga., on Tuesday, the 8th of July next, at 10 o'clock A. M.

The State Board of Dental examiners meets at the same time and place.

L. D. Carpenter,

Cor. Secretary.

The American Dental Convention

Will hold its 25th Annual Session in Saratoga on the Second Tuesday, (12th) of August, 1879. The Committee have made arrangements by which members will be entertained at reduced rates at the United States Hotel.

Provision has been made for the exhibition of Dental Materials, Appliances, &c. Manufacturers and Venders are invited to exhibit.

The profession generally are earnestly invited to attend this Session, which is expected to be of more than usual interest.

All reputable practitioners are eligible to membership.

For further information address J. G. Ambler, 25 West 23rd Street, New York.

J. G. AMBLER,
JOHN ALLEN,
L. S. STROW,
C. F. RICH,
Committee of Arrangements.

EDITORIAL, ETC.

Indiana Medical Protective Law.—A recent enactment of the legislature of Indiana provides that all legally chartered Medical Colleges in that state shall have appointed from the State Medical Association *of the same school of practice*, to which such College belongs, a "Board of Examiners," who shall examine all candidates for graduation, and shall recommend or not the bestowal of diplomas. Gradnates five years in practice, and non-graduates two years in practice previous to the passage of this act, are exempt from its provisions. Each candidate for practice, not thus excepted, is required to present his diploma to the clerk of the court, before he can obtain license to practice. The penalty for violating this law is imprisonment in jail not less than six months, and $25 fine. In force from its passage.

Is it not time that something of this sort was done in dentistry, and could not a concerted move be made by the profession which would bring about the enactment of some such law? If the practice of medicine needs protection,—and that it does need it is evident from the above and similar moves in other states than Indiana,—surely we need protection as well, in our scope and range. The flood of candidates for graduation in the dental schools, and the strong pressure brought to bear on those having charge of these institutions, has its natural effect on even those whose intentions are the best; as a consequence a revision of the decisions of inside examining "Faculties" by outside and less sympathetic "Examining Boards," would doubtless check the tendencies which now exist, and which must exist so long as the relations of teacher and student are what they are. The subject is one of difficulty, and it is hard to see how the adoption of such a rule on the part of dental colleges, or the construction of such a law, could rid the case of all its embarassments. Still, it is probable that less hardship would result than at present, for no hardship of rejection can equal that of graduates, incompetency—a double injury, to the student, and to the public.

Cannot those who mould public opinion; cannot the American Dental Association, or the Southern Association, set on foot some scheme which will result in the definite solution of this problem so far as our profession is concerned. The colleges are what the profession make them, and are ready to respond to pressure from without, but it is in vain to hope that they will do more than this; in vain to hope that they will anticipate public professional desire publicly expressed.

Apropos of this subject, we notice that in Alabama, where were recently enacted laws providing for a State Board of Censors of the Medical Association of that State, *six out of seven* of the applicants to this board for diplomas were rejected outright; yet these men had been practicing or pretending to practice medicine for years. What has been done in Alabama for the protection of medical practice can be done in Maryland and Virginia for the protection of dental practice, and should be. Certainly every man who is competent should be allowed to practice dentistry, or any other calling; but for the protection of the public, the profession, and in the interests of the colleges themselves, as many guards as possible should be thrown around the subject. The dental student and candidate for graduation is doubtless as well trained as is the student of any other profession for his calling, but if additional guards are put *outside of and independent of the colleges*, it will for obvious reasons surely make these more careful. H.

Loss and Gain.—The immense advance in the profession of dentistry in the adaptation of machine-work, the fertility of inventive genius in producing instruments and appliances to facilitate the performance of operations upon the teeth, and the ready access by almost all to the sources of supply—the dental depots—have made changes which are working in more ways than one. As seen by the average practitioner, and as estimated by most of those whose practice "drives" them, the introduction of the dental engine, of the automatic plugger, the electric mallet, &c., are helps such as the busy man feels have grown out of the demands of the times, and out of the necessities of his calling. He feels that he could not do without them, wonders how he ever did, and smiles in quiet contempt of the "old fogy" who is unprovided with the "recent inventions."

But, if these things are real gains, if the labor-saving machinery and appliances for the rapid execution of work are positive advantages, and the dentist as well as the patient is advantaged by them, there is a loss to those of the profession who would under favorable conditions develop in prominence, so far counterbalancing the gains as to set one to seriously thinking if the gain is a satisfactory one, and compensating in effect.

The words "immense advance" used in the first line of this article are worth pondering over. They are used in this place in the popular sense. That the appliances and "engines" put into the hands of the young dentist are of ingenious construction and almost faultless mechanism no one can doubt who inspects them. But while they are useful to the average operator, *he who wishes to rise to a higher place, and develop the best of what is in him, will surely find these things a hindrance.*

Handicraft and deftness always fall off and are injured by machine-work. The machine will produce fairly well, but the best, and consequently rare, productions are the result of *genius guiding the hand.*

These thoughts are commended to the young of the profession, who are ambitious to aspire to burring engines and mallets. What the young want above all is hand-culture. No machine will take its place; and as well had the pupil at the piano undertake the fantasias of the master, in the hope of solid development as the student of dentistry hope to train the hand to that perfection of manipulation and delicacy of touch requisite to the production of the best work, by the use of machines of any sort, save such as resemble in handling the tools of the engraver. If we are gaining in facility, we are losing in deftness; and it is time that the teachers were pondering the question, not how fast can we introduce engines, &c., into the infirmaries and clinics, but how fast can we check their use. The future destiny of a manipulative profession like ours *lies in the ideal production of its masters.* These are few. Count all you know in dentistry on your fingers. Will you use all on one hand? The tendency of machines is to level, and will make average, but not first class operators; and you cannot profitably imitate your neighbor unless he is higher than yourself.

And if any young man of this day who reads these lines, wishes to rise to the height attained by a select few, if his aspirations are to develop all the latent genius resident in him, let him earnestly consider the means by which those who are his ideals were developed; let him scrutinize the practice of those who are of mediocre standing: and as a rule he will find that the best men use their brains and fingers, the mediocre men the brains and fingers of others, represented in our day largely by machines. H.

Storms and Neuralgia.—The *Sun* informs us that Dr. S. Weir Mitchell has discovered a new reason for the existence of the signal service and for the necessity of the storm signals issued by it. He read a paper before the National Academy of Sciences at its April meeting on "The Relation of Neuralgic Pain to Storms and the Earth's Magnetism." In the paper he recorded observations made by him in conjunction with Capt. Catlin, U. S. A., who, having lost a leg during the civil war, has since suffered from traumatic neuralgia in the stump. These observations include hourly records during five years, and the neuralgic attack was found to accord very nearly with the approach of a storm, and the pain to be greatest in the periods of greatest barometric depression. If these observations should be supported by others, so that the relation of neuralgic pain to storms can be established, we will find sufferers from the disease flying the world over from storm centres as faithfully as ships now do so at sea. When the danger signal is up the neuralgic patient who can't get away will retire to his home and send for his flannel wraps, his liniments and his doctor. He will look for the weather report in the paper in the morning before making up his mind to rise from bed, and will study it in the evening before going to his club, or to theatres and parties. The ladies, most of whom are neuralgic, will be afforded a new line of excuses for not seeing disagreeable and unwelcome visitors. "Pardon me," they can send down word, "the weather report announces that I am about to have an attack of neuralgia," or "Mrs. Jones desires to be excused under warnings from the signal service." These storm warnings will also be profited of by prudent husbands to dine or take a lunch down town. In fact the new system will work many reforms in our domestic relations.

Orkney Springs, Virginia.—This old and popular watering place opens June 15th. To the broken down, or those with worn down energies, we know no better resort. Every dentist should have six weeks or two months' recreation, and the mineral springs of Virginia afford facilities for recuperation not excelled anywhere else. According to a late writer who makes his deductions from the last United States Census, the region of country marked by the mineral springs of Virginia enjoys greater immunity from pulmonary diseases than any other region of the Union. H.

MONTHLY SUMMARY.

The Woman-Doctor Question.—It is sometimes stated that the woman doctor is a recognized institution in the empire of the Czar, a belief in some sort warranted by the prominence which has of late years been given in the medical schools of St. Petersburg to the training of women students in physic. According to the Russian *Medical Gazette*, it would appear that the question of women medical practitioners is not yet settled in Russia. On the 29th of October last the right of women who had completed a course of medical training to practice medicine in the empire was brought formally under the consideration of the Sanitary Council attached to the Ministry of the Interior. After prolonged discussion, the Council unanimously resolved, as follows:—"Although the right to practice medicine by the female students of the medical faculty has not to the present been recognized by the legislative authority, having regard to the evidence now submitted by the professors, that these students are fully competent to exercise the medical profession, the Sanitary Council will itself endeavor to obtain from the Government the authorization necessary for them to enter upon practice." Forty-eight American ladies, students of medicine, under the guidance of a professor, have recently visited the hospitals and scientific establishments of Venice, Milan, Florence and Parma. —*Med. and Surg. Reporter.*

How to Avoid Leaving Scars.—At a conversational meeting of the Philadelphia Medical Society, November 13 1878, it was addressed by Dr. John H. Packard, on "Some Surgical Wrin-

kles." The first point he discussed was a method of making superficial incisions by which scarring can be avoided. In operations upon exposed parts, such as the face and hand, it is very desirable that they shall be so done as to leave as little scar as possible. The procedure recommended was first suggested by witnessing the effects of an accident, a lady having fallen while carrying a china dish, a piece of which made a long gaping incised wound in her hand, the sharp, knife-like edge having cut through the skin very obliquely. The wound healed readily, almost without a scar. A few weeks afterwards the traces of the injury could scarcely be discovered.

Thinking that this effect was in great measure due to the direction of the incision through the skin, the speaker tried the experiment in cutting down upon a tumor of the thigh, holding the knife so as to divide the skin obliquely. The wound united perfectly, and after it had healed he actually could not find the line of incision. Since that time he had tested the idea in numerous other cases with highly satisfactory results. In small superficial operations, such as the removal of small tumors from the face, it has a cosmetic advantage that at once recommends it.—*Medical Brief.*

Personal Similarities and Dissimilarities.—A French writer, M. Delaunay, makes the curious observations that all savages belonging to the same tribe closely resemble each other in form, strength and in intelligence. But in the higher classes of mankind we have a primitive type replaced by multiple and various types of men—individuals differing so much from each other that it is impossible to find two persons absolutely alike. From a sexual point of view, we find more variation among the males than among the females of the same race. This is especially the case in the human species, among the male portion of which there is a much greater diversity of constitution than there is among the female portion. With regard to age, nearly all infants resemble each other, both physically and morally. Moreover, all old men have the same weakness of constitution, the same feelings, the same tastes and the same childish notions. On the other hand, adults present among themselves the greater variations. With regard to constitution, the strong and the intelligent differ from each other much more than the weak and unintelligent.—*Med. and Surg. Reporter.*

Poisoning by Chlorate of Potash.—This drug is so freely used as a domestic remedy, that the following case, which occurred in the family of Dr. Kauffman, of Berlin, will be read with interest. It is given in the *Med. Central Zeitung:* He used to

keep a certain quantity of this salt in a tin box, and give some of it daily to his children, as prophylactic treatment against diptheria, which happened to be epidemic at that time in the neighborhood. One day, the children, while playing, possessed themselves of the box, and took each about half an ounce of the chlorate of potass. The youngest child, a girl two years and a half old, had severe vomiting, which lasted for seven hours, when she died of gastritis, in spite of all help. Another remarkable symptom of the poisoning was the profound lethargy of the child, which probably prevented its showing symptoms of pain. Another similar case is mentioned, of a young man who had taken small doses of chlorate of potass. to cure himself of hoarseness. From the time of taking the first dose to the moment when he left off, the patient suffered from gastritis, and vomited everytime he took the drug. These symptoms ceased as soon as the medicine was discontinued, which clearly shows it to have been the primary cause of the inflammation.—*Med. and Surg. Reporter.*

On the Prevention of Fatal Accidents from Using Anæsthetics.—Dr. Simonin gives, in the *Revue Med. de l' Est*, 5 année t. x, No. 9, p. 261, the following three observations, which may be considered as very important if attended to. 1. Progressive peripheric insensibility, especially in the temporal region and the cornea. 2. The condition of the muscles and the jaws; the former must be in a complete state of relaxation, and the jaws closed. The adductor muscles of the lower jaw, therefore, form an exception to the rule, by being in a state of trismus. 3. The state of the pupil, which must be contracted, while the respiration becomes more normal, having been much quickened during the stage of excitement. All these phenomena are very important; they are synchronous, and must be carefully observed, as well as respiration and circulation: If the three symptoms cited should not appear coincidently, they must be carefully watched for in various stages of the anæsthesia, because they are sure to oppear at a given moment.—*Med. & Sur. Reporter.*

A New Insect Powder.—The wild rosemary (*Ledum palustre*) is said to be a first-rate plant for the destruction of all kinds of annoying insects, and may be usefully employed as a substitute for pyrethrum or "Persian insect powder." It can be used dried and pulverised or used fresh. The tincture readily relieves the itching from bites of gnats and mosquitoes. Glycerine added to the tincture and rubbed on the hands and skin is a protection. The plant grows wild in Europe and the northern parts of America, and may be obtained at less cost than the pyrethrum. —*Drug. Circular.*

Very Large Salivary Calculus.—Dr. Freudenberg relates the case of a gentleman who consulted him on account of a tumor under the tongue, which gave him only moderate uneasiness, and did not cause any increase of the normal saliva. It dated back six months, and had been since then continually on the increase. On inspection a salivary concretion was found to be projecting to the extent of a centimetre, and by a little manipulation the calculus was dislodged by mere pressure, springing out at last as if from an elastic ring. In length the concretion measured 3.5 centimetres, the diameter of its base measured 1.4 centimetre. It consisted of phoshate and carbonate of lime, and an albuminous substance, the phosphate constituting an unusually large proportion. The calculus occupied the right sublingual gland.—*Berlin Klin. Woch.*

Replanting Teeth.—A correspondent states that in the preparation of the tooth for replanting or transplanting, he fills the foramen at the end of the root, by inserting in it a gold screw that will completely fill it, then fills pulp chamber and cavity of decay, then upon the surface of the root cuts a groove from apex to neck; this facilitates the escape of the blood as the tooth is placed in the socket.

This, it is alleged, will obviate the pain that otherwise sometimes accompanies the replacement of a tooth.

This groove would rarely, if ever, be required, in transplanting, from the fact that an absolute adaptation of a root to another socket is never found.

Replanting is becoming more and more a favorite method of treating alveolar abscess.—*Dental Register.*

Registration of Dentists in England.—The law requiring the registration of dentists in the United Kingdom is being enforced, and the officials are overwhelmed with work in that connection. The law applies not only to those exclusively engaged in dental practice, but to those who, engaged in pharmacy, etc., occasionally practice tooth extractions and perhaps perform other operations. The fee is from 2 to 5 pounds sterling, and there are from 1500 to 2000 dentists in practice.

One of the tasks of the Council is the recognition of foreign and colonial dental diplomas, and weighing the evidence entitling applicants to registration. The *Lancet* thinks the task no easy one.

Chronic Pharyngitis, may be cured, according to a writer in the New York *Medical Journal,* by gargling the throat with water at the temperature of 15° to 20° C. Persistence in the treatment is necessary.

Ergotine for Neuralgia.—Marino recommends the following solution as a hypodermic injection in neuralgia: R. Ergotine gr. ijss. to gr iv., distilled water or glycerine q. s., made into a solution for one injection. It causes a more or less intense burning sensation, which disappears in about half an hour, if the part is covered with cold, wet compresses. It does not usually give rise to abscesses or erysipelas, etc. According to the author, a single or at most two injections suffice for a cure, although it is better, in order to prevent a relapse, to give from four to six injections more, according to the intensity of the pain or its long continuance.—*Druggists Circular.*

Treatment of Ulcers.—Dr. Mandelbaum asserts that ulcers of the leg which have proved rebellious to all other methods of treatment, can be invariably cured by scraping, followed by the application of iodoform which must be continued for several days, and, after fresh granulations have appeared, by firm pressure with equal parts of mercurial and soap plaster.—*Berl. klin. Wochen.*

Whooping Cough and Ulceration of the Frænum.—A recent report before the Academy of Medicine in Paris, says that the ulceration is an affect rather than a cause of the disease, and is due to the protrusion of the tongue and the scraping of its under surface against the teeth, in the act of coughing.—*Med. Record.*

Chloroform Narcosis.—Wachsmuth, of Berlin, asserts that much of the danger from the administration of chloroform may be averted by adding to it twenty per cent. of oil of turpentine, which, he says, stimulates the lungs, and thus protects them against the great enemy of chloroform narcosis—pulmonary paralysis.—*N. Y. Medical Record.*

A Perfumed Solution of Iodoform.—Shake tincture of iodine with a fragment of fused potassa till the color be removed. Cover the odor of the iodoform thus produced by the addition of eau de cologne. Dip lint in this solution, allow it to dry, and one will have an agreeable and excellent application for indolent ulcers, fissure ani, burns, etc.—*Med. Record.*

Freckles.—Take of finely powdered sulphophenate of zinc, one part; oil of lemon, one part; pure alcohol, five parts; collodion, forty-five parts; mix well together by triturition. This has been found efficacious as a local application against freckles and other slight skin diseases.—*Pharm. Zeit. fur Russ.*

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ARTICLE I

Periostitis—Its Causes and Remedies.

BY DR. W. R. HOLMES, MACON, GA.

Read before the National Dental Association, and Georgia State Dental Association, July 9th, 1879.

Having been appointed at the last meeting of this honorable body, held in Atlanta, last year, to prepare an essay on the subject of Periostitis, to be presented at this meeting, for your consideration, I will now, to the best of my ability, give you such ideas as have occurred to me.

By way of introduction, allow me to state that I feel my inability to lay before you any new or advanced views on the subject, differing, probably, from those held by every member of the society. The subject, however, is an important one, and while I may only give a rehash of old theories, still merely bringing them afresh to your minds, will at least cause a discussion, and mayhaps, here and there among you new ideas and experiences crop out which will be of great value one to the other.

Periostitis, as its name indicates, means an irritation of the lining membrane, called the periosteum, around the

roots of the teeth, located in the alveolus. The Periosteum, the seat of the disease, is a highly vascular membrane, and is subject to considerable degree of inflammation. Perhaps there is no membrane in the human organism, which has more exciting causes to abnormal disturbance, being the lining membrane around the roots of the teeth, and acting, as it were, a cushion between the roots and the inner surface of the alveolar process, thus establishing a close relationship to the teeth, so that whatever causes disturbance in those organs, correspondingly acts upon the membrane. The teeth are constantly in a state of disease, and correspondingly the Periosteum Periostitis, the chief disease to which the membrane is liable, comes probably under the care and observation of the dentist more than any other disease, and none other which requires fewer sense of dognosis or more active and delicate treatment. The disease may exist either in a chronic or active condition. The active originates from direct local irritation. The chronic from systemic influences. The evidence of active periostitis is a dull, heavy, gnawing pain, and is the result of simple vascular excitement—in the ratio of advanced inflammation, the pain increases. The tooth becomes very tender to the touch —in fact becomes longer—so much so, that occlusion of the jaws produces intense pain, and the attention of the sufferer is constantly engaged in keeping the teeth from coming in contact.

If the primary inflammation is not arrested the action goes on until suppuration takes place, and an alveolar abscess the result.

Chronic periostitis originates from many causes.

Mercurial ulitis, a very frequent cause, Scorbutus found very commonly where polk is used exclusively to the neglect of vegetable diet.

Neuralgia reflection frequently causes irritability in the peridental tissue. Rheumatism and gout too often indirectly beget periosteal disturbance. Old age is still another cause, the teeth becoming loose from a degenerating condition of the periostial membrane.

Accumulation of tartar is probably the most common cause where the membrane become excessively irritated. In chronic periostitis the tooth becomes sore and tender and elongated; but the progress is slow, and may exist a long while without very acute pain; the disease is recognized, but is sufficiently bearable, and does not demand active treatment. It most generally though, grows into the active form, and then active remedies are called for; we have therefore, on account of immediate relief being demanded by the sufferer, to deal with this class of periostitis more generally than the chronic. The causes which originate the acute form of periostitis are varied.

The most common probably, originates from a diseased state of the dental nerve. A devitalized nerve will produce acute inflammation, especially should the nerve be confined in the nerve canal and no outlet save that of the foramen at the end of the root for the gas generated from a decomposing nerve to escape through. A blow upon a live tooth causing death of the nerve, brings about this condition, or a filling upon an exposed or nearly exposed nerve, or wedging heroically or using soft rubber between the teeth to separate. Still again the use of ligatures, in the correction of irregularity allowing the ligature to work its way under the gum will cause acute periostitis. Too strong escharotic such as caustic, applied to arrest hemorrhage will bring about this condition. Arsenic applied to an exposed nerve and allowed from an improper stopping of the cavity to drip around the neck of the tooth will cause extreme periosteal disturbance, and frequently absorption of the alveola process, and sometimes entire loss of this membrane.

A crowded state of the teeth, particularly when there is a full denture and the wisdom teeth to come and no room for them, and the wisdom teeth wedging the others forward, causes general periostal trouble, wearing down the teeth, especially found in old people, most frequently from use of tobacco; the enamel and dentine is whetted off until only a thin plate of dentine is left to cover and protect the nerve,

causes irritation of the nerve and following inflammation of the periosteum.

These causes just enumerated, are the most common met with in general run of practice. We sometimes find a severe periosteal disturbance, and fail to trace to any of the ordinary causes and are much puzzled to find the origin of the irritation and acute pain. These cases may be termed anomalous.

I will describe a case in practice to illustrate:

A lady of about forty years of age; of full habits, large, robust and healthy, called, complained of soreness in superior right, second molar, and occasional paroxysms of pain darting around the teeth and in the cheek and face; said she had been suffering some time; examined teeth closely, seemed to be perfectly sound, saw no sign of decay. It occurring to me that there might be decay between the teeth, the first and second molars were wedged apart, and sure enough two small decays found. There being no indication of the pulps being dead, the cavities were prepared and filled, the gums painted around with Tinct. of Iodine and Aconite Root, and patient dismissed.

Several days elapsed, and patient returned, still complaining of soreness and occasional paroxysms of pain. Again painted gums with Iodine preparation and had her to come several days, using same treatment Still no relief. Finally decided to drill into pulp chamber of second molars; did so, and found nerve alive and excessive hemorrhage from puncturing nerve; applied arsenious acid, and in due time removed devitalized nerve; treated until all soreness left; when the tooth was filled temporarily, and patient again dismissed. Again she came in, old symptoms, only in the first molar; decided to treat that in same manner as with second molar; did so, and with like result. Patient dismissed; in about two weeks she returned; soreness all gone from first and second molars, but most fearful pains darting about the face; said she would rather have every tooth in her mouth extracted than suffer such agonies. Described

her suffering as perfectly excruciating—not continued but at intervals—simply passing her hand over her face, washing her face, holding her head down, touching the tooth with her tongue; in short, any movement of the jaws would produce sudden and darting shocks like a galvanic battery. Examined her mouth again and found the pain seemed to start from the right superior cuspid or eye-tooth, which ap peared to be sore and elongated, and very tender to the touch; especially so to the occlusion of the jaws, indicating extreme periostitis. Decided to try same treatment as pursued in the first and second molars.

Applied arsenious preparation, in due time removed nerve, treated until all soreness was gone and put in a permanent filling, also at same time removed temporary fillings in first and second molars and filled permanently. All pains hav ing disappeared and the mouth of the patient perfectly free from any disturbance, the patient was dismissed and from that time, about six or eight months since to the present she has been entirely free from pain.

Here was an anomalous case of periostitis, such as rarely comes under the observation in ordinary run of practice. This is a case that gives food for thought and discussion! What was the origin of this disturbance? Why those darting pains and extreme paroxysms, like galvanic shocks, made more intense by simply washing the face or moving the jaws or any sudden movement of the head? Why did the periosteal disturbance locate in the first and second molars and the teeth apparently perfectly sound, and when the nerves in them is destroyed and all pain removed it should then locate in the eye tooth; and then why, after that was treated in same manner as the other teeth all the disturbance should entirely disappear? We would like to have an expression of opinion and hope to get more light on so strange a case. Garretson, in his work on Oral Diseases and Surgery, says: "In rare cases there is found to exist an irritability of the dental pulp, which exhausts itself in the formation of isolated granules of semi-bone like characters,

which obtain lodgement in somo portion of the organ and become in turn the source of great offence to the parts, resulting, indeed, frequently in an odontalgia, than which there are few severer forms. To diagnose this condition, is an exceedingly difficult matter, and it can, perhaps, be best done by exclusion. The teeth in these cases present every appearance of the highest health; no discoloration; no soreness on pressure, and not unfrequently being without the slightest local pain, this manifestation being situated in some distant part, as the ear, eye, the scalp, etc. Whether, however, the pain may be localized or diffused, it is always expressed by the patient as being entirely unbearable, and is commonly, more or less paroxysmal in character, thus being mistaken for idiopathic neuralgia, and frequently so treated."

I quote thus from Garretson. By way of hinting a probable cause for the origin of this case, I will now give a case in practice to show how we are sometimes mistaken in locating periostitis and the cause: A gentleman called, complaining of severe pain in first inferior lower molar—left side—which had been filled by us, probably a year previously; complained of its being sore, when he closed his mouth, in fact, seemed longer than the others when he closed his mouth. We examined and found a large gold filling in the crown. We at first supposed the nerve had died and decided to open into the pulp chamber. The filling being so large, in such perfect condition, we concluded, upon second thought, to apply Iodine and Aconite preparation, and wait for further developments; did so, and asked him to come next day. At the appointed time he came and still complained. In the course of conversation with him, we learned that he had broken off a wooden tooth pick between the first and second molars above the molar complained of, and didn't know whether he had gotten all of it out or not. We examined between the teeth, and sure enough found the tooth pick there and pulled it out. We then applied the Iodine and Aconite preparation a few days, and all trouble

ceased. In his case the tooth pick had caused the periosteal membrane to become highly irritated and inflamed; so much so, as to cause the superior molar to become elongated and striking against the lower molar, made him think that this was the offending organ.

To locate the periosteal disturbance and get at the cause, requires care and oftentimes the very closest attention and finest discrimination. The remedies used in periostitis are as varied as the different forms of disease.

All causes of the disease being removed, the remedies are generally of a simple character.

If caused from tartar, remove that carefully and paint around the gums with simple Tincture Iodine and Aconite preparation, and use some carefully prepared mouth wash to restore the gums to their normal condition. If periostitis comes from a dead pulp, remove all traces of the dead nerve and then treat the inflamed membrane on general principles.

Taking it for granted that all causes of inflammation have been removed, a large per cent. of acute periostitis taken in time may be aborted. In first stage, simply painting the gums with Tinct. Aconite ¼ and Tinct. Iodine ¾ parts will give relief.

If the form of inflammation be aggravated, provoke free bleeding by scarifying the gums; as soon as the vessels and capillaries have disgorged themselves, paint the parts with Iodine and Aconite preparation. Place the feet of the patient in very warm water, apply a blister the size of a lime piece just in front of the ear and upon the nape of the neck, about the size of a silver dollar; administer internally twenty-five grains of Bromide of Potassium, having combined with it five drops of the Tinct. Veratrum Veride; this combination may be repeated in four hours if relief is not obtained sooner.

After lancing the gums freely and the use of Tinct. Aconite Root and Iodine preparation, keep cotton saturated with Tinct. Calendula, or if this is not convenient, with the fluid extract of Hamamelis Virginicus combined with equal

parts of Phenol-sodique. This treatment, if all causes of irritation have been removed, seldom fails to relieve. It will be well to keep the feet in warm water until the patient grows faint or breaks into perspiration. To those of a plethoric temperament half ounce of Sulphate of Magnesium may be given in a goblet half full of water.

Hydrate of Chloral is often used with efficacy; about ten grains to the dose is a sufficient quantity to be administered and will always be on the safe side.

Leeches are sometimes used to advantage placed on the gums at the root of the offending organ; either in the lower or upper maxillary. This is very objectionable to some patients and cannot always be used. A simple remedy is the application of a roasted raisin over the root; this sometimes is found beneficial.

A valuable refrigerant lotion to the inflamed parts may be applied on a pledget of cotton placed between the gum and cheek, is as follows:

℞.—

Plumbi Acitatis, -	1 drachm,
Tinct. Opii, -	½ ounce,
Aquæ, - -	10 ounces.

Mix.

Another:

℞.—

Potassa Chlorate, -	2 ounces,
Aquæ font., -	8 ounces,
Tinct. Opii, - -	½ ounce.

Mix.

Dr. Chase, of St. Louis, Mo., recommends in incipient periostitis, saturated solution of Iodide Potassium, one drop every hour until better. Another of his remedies in mercurious vivus, third decimal trituration. One grain every hour until better. No medication, he says, is more efficacious than this homœpathic remedy as prepared by them.

There are many other good remedies used by different members of the profession, and we trust that each member

of the Society will ventilate his particular remedy and mode of treatment, so we can each derive benefit from it in our practice. We are here to exchange ideas and learn from each other.

After years of study and labor, who among us is satisfied with the work of his hands; how many imperfections we see; desire is not satisfied; rest is not found.

There are those mayhaps, who are so self-sufficient as to flatter themselves that their productions are perfect. To such, an appeal would be folly, for "egotism has dammed up the sponge of their aspirations and ignorance holds unlimited sway."

There is probably no one part of the body, the treatment of which requires such an extensive knowledge of the system as the mouth and its attendants.

It is the duty of the Dentist to treat all parts that surround the teeth and are influenced by them, or which they influence.

All should labor zealously for higher attainments. We must labor for proficiency; "to save is better than to destroy." Dental art should be more conservative than it has been. The forceps should rust more in idleness instead of being kept bright with active service.

The preservation, not extraction of a tooth, will then, as it should now, enlist all the energies of the devoted and conservative dentist, who, with the co-operation of the patient, when he has been well trained, will be able to succeed in saving from "the rapacious jaws of the bloody forceps," God's beautiful creation, "those pearls of great price."

ARTICLE. II.

The National Dental Association.

The Eleventh Annual Session of the National Dental Association was held in Augusta, Georgia, commencing July 8th, 1879, and proved to be one of the largest and most beneficial sessions of the dental profession ever held in the Southern States.

An address of welcome on the part of the City of Augusta, was delivered by Dr. Geo. H. Winkler, in the following happy manner:

He thought they would have a satisfactory and creditable meeting, for this Association honored Georgia by meeting within her borders and deliberating in Augusta. He congratulated the Association upon its prominence, which he trusted would be second to none at an early day, and for the high standing of the profession in the States and in the country. It was proposed to take the delegates up the canal and let them float upon the bosom of Lake Olmstead in those beautiful steamers, one of which sunk last week with a party of negro excursionists. (Laughter.) The steamer, however, floats once more and is all right again. We then, he said, propose to show you all the dam bulkhead—or bulkhead dam—a work of so much engineering skill. We propose then gentlemen, continued the facetious orator, to show you one Uriah, not the Biblical character and friend of David, but Lexius Henson's steward, so adept in building lemonades and making whisky punches. (Laughter.) The President wisely informs me that being a temperance reformer, and having only joined a lodge last night, I should not mention these things; but I do mention them because I know they will make you all feel good. (Laughter.) And then gentlemen, when we return to town from this excursion, to show that there is nothing mean about us, we propose to make you pay for the fun. (Laughter.) But gentlemen, I do welcome you to the city, and you know I do. (Applause.)

Dr. J. D. McKeller, of Reynolds, Taylor county, Ga., was then introduced by President Wardlaw, of the Georgia Society, and in behalf of the State Society welcomed the National Association. He hoped that the dignity, importance and honor of the profession would be upheld. The Association would develop opposition to pet schemes and hobbies, but every one should receive defeat coolly and well, for opposition is the law of progress. He welcomed the National Association to Georgia as friends, as brothers, and as laborers in a common cause.

The National Dental Association was then convened by the President, Prof. F. J. S. Gorgas, of Baltimore, Md., after which the roll of members was called by Dr. E. S. Chisholm, of Ala., Recording Secretary, the following officers responding and a large number of members:

President.—Dr. F. J. S. Gorgas.

1st Vice President.—Dr. L. D. Carpenter.

2nd Vice President.—Dr. J. R. Walker.

Recording Secretary.—Dr. E. S. Chisholm.

Treasurer.—Dr. H. A. Lowrance.

Members.—Drs. Ervin Floyd, Fayetteville, N. C.; Vines E. Turner, Raleigh, N. C.; D. L. Boozer, Columbia, S. C.; J. Quattlebaum, Blythewood, S. C.; G. H. Winkler, Augusta, Ga.; S. Hape, Atlanta, Ga.; W. R. Bull, Charleston, S. C.; F. J. S. Gorgas, Baltimore, Md.; J. S. Thompson, Greenville, S. C.; J. D. McKeller, Reynolds, Ga.; W. C. Wardlaw, Augusta, Ga.; J. A. Herman, Nashville, Tenn.; J. H. E. Millhouse, Blackville, Ga.; B. J. Quattlebaum, Williston, S. C.; R. W. Thornton, Calhoun, Ga.; R. C. Roberts, Allendale, Ga.; J. A. Harman, Prosperity, Ga.; J. P. Holmes, Macon, Ga.; G. W. McElhany, West Point, Ga.; J. H. Coyle, Thomasville, Ga.; E. Parsons, Savannah, Ga.; L. D. Carpenter, Atlanta, Ga.; D. P. Holloway, Americus, Ga.; W. F. Tignor, Columbus, Ga.; T. T. Moore, Columbia, S. C.; J. R. Thompson, Newberry, S. C.; J. B. Patrick, Charleston, S. C.; A. G. Bouton, Savannah, Ga.; T. P. Legare, Camden, S. C.; R. B. Adair, Gainesville, Ga.; C. C. Patrick, Charleston, S. C.; E. S. Chisholm, Tuscaloosa, Ala.; T. M. Allen, Eufaula, Ala.; H. J. Mozon, Blackville, Ga.; M. A. Bland, Charlotte, N. C.; B. H. Teague, Aiken, S. C.; G. F. S. Wright, Columbia, S. C.; J. P. H. Brown, Augusta, Ga.; S. B. Barfield, Macon, Ga.; W. W. Ford, Macon, Ga.; G. B. White, Chester, S. C.; J. M. Mason, Columbus, Ga.; N. C. Quillan, Thomson, Ga.; Geo. W. H. Whitaker, Sandersville, Ga.; J. R. Walker, New Orleans, La.; D. L. Wilson, Abbeville, S. C.; H. Parker, Edgefield, S. C.; D. E. Everett, Raleigh, North Carolina; R. M. Gage, Nashville, Tenn.

Many others arrived after the morning session whose names will appear in the volume of proceedings.

The Presidents of the Georgia, South Carolina and North Carolina Dental Societies were invited to seats on the stage.

The names of Drs. Patrick, Parsons and McElhany were then announced as the Committee on Membership.

The minutes of meeting at Niagara Falls, August, 1878, were read and approved. President Gorgas then delivered the annual address. He requested the co-operation of all to the high development and progressive advancement of dental surgery and dental literature. People are often imposed upon, and confidence often given to men unworthy of it. It is our duty so to educate the public as to enable them to bring common business sense in selecting a dentist. Our profession will compare most favorably with all others, for its foundation is science, and its aims the good of mankind. Dr. Gorgas then dwelt upon the physiological structure of the teeth, and its wonderful functions connecting the past with the present, uniting the mammals of geology to the human beings of to-day. Dr. Gorgas advocated an improvement in preliminary education. The distinguished speaker then dwelt upon talent and genius and the tendency of science. Speculative thought may be apparently at variance with divine revelation, but the demonstrative science must always prove a single and inspired origin in the vegetable and organic kingdom. Dr. Gorgas concluded that all life must have originated from a personal Creator. The President hoped that this year a union would be made between the American Dental Associations and State Organizations, to form a general National Association. He deprecated the fallacy of sinking the dental with medical science, and said that the combination was not necessary, and that a dentist need not have received a medical education. He cautioned all laborers in the science not to allow the ambitious soul to struggle at the expense of the material body. He feelingly alluded to the death of prominent and distinguished workers in the profession, among the number

the late Profs. P. H. Austen, of Baltimore, and John H. McQuillen, of Philadelphia.

After the address the regular business of the session was commenced. The name of the Association was changed from the Southern Dental Association to the National Dental Association.

The following order was determined upon for discussing important subjects:

1. Dental Education. 2. Dental Histology and Microscopy. 3 Causes of Deterioration of Teeth. 4. Care of the Teeth during Gestation and Lactation. 5. Deciduous Teeth —their relation to the Permanent and their Treatment. 6. Transplanting and Replanting Teeth. 7. Relative Merits of Cohesive and Non-cohesive Gold as a Filling for Teeth. 8. Contour Fillings. 9. Conservative Treatment of Dental Pulp. Dead Teeth and Alveolar Abscess. 10. Relative Merits of Rubber and Celluloid. 11. The use of Plastic Materials for Filling Teeth.

It was determined that the daily sessions be from 9:30 A. M. to 1:30 P. M.; 3:30 to 6:30 P. M. and 9 to 11 P. M., and that Clinics be held daily from 8:30 to 10:30 A. M.

The subject of "Dental Education" was taken up and discussed by Drs. Wright, of South Carolina, Mason, of Macon, Walker, of New Orleans, and others. The next regular subject "Dental Physiology and Surgery" was introduced and discussed by Drs. John H. Coyle, McKeller, Patrick, Holmes, Carpenter and Tigner.

SECOND DAY'S PROCEEDINGS.

The Association was called to order at 10:30 A. M. by the President, Prof. Gorgas. Dr. E. Parsons, of Savannah, Ga., read an interesting paper on "Dental Physiology."

The following committee was appointed to report on Mechanical Appliances: J. R. Walker, of New Orleans; G. F. S. Wright, of Columbia; and V. E. Turner, of Raleigh.

Dr. Winkler extended, on behalf of the dentists of Augusta, an invitation to go up the canal this afternoon on a pleasure trip, which was unanimously accepted.

The following committee on publications was appointed: Drs. E. S. Chisholm, H. A. Lowrance and W. W. Ford.

The Executive Committee consisting of Drs. W. C. Wardlaw, Augusta, Ga.; G. H. Winkler, Augusta, Ga.; G. W. H. Whitaker, Sandersville, Ga., then made a report which was accepted.

Some very able papers were then read on Dental Physiology and fully discussed, a large number of the members participating.

The hour of adjournment having arrived, it was determined to devote the afternoon to the excursion to the Locks, which had been tendered by the dentists of Augusta. The members accordingly went up the canal on Commodore Armstrong's fleet, and had a delightful time.

The refreshments were provided by Mr. Hugh Boyle, and were served in fine style. On the return trip a number of the party were called on and made impromptu speeches.

At the evening session interesting papers on Histology and Microscopy by Drs. W. H. Atkinson, of New York, and S. P. Cutler, of Memphis, Tenn., were read.

THIRD DAY'S PROCEEDINGS.

After the Morning Clinics, the Association was called to order by the President, Prof. Gorgas, and the subject of Dental Physiology continued.

Dr. J. P. Holmes, of Macon, read a paper on Dental Chemistry, which was discussed by Drs. Winkler, Ford, Moore, Walker, Brown, McKeller, Teague and Parsons.

The subject of Operative Dentistry was then taken up and interesting discussions followed. Also, an interesting exhibit of appliances for fracture of the Lower Alveolar Border by Dr. Harker.

At the opening of this morning's session an interesting essay on Dental Therapeutics was delivered by Dr. G. S. Wright.

Dr. T. T. Moore discussed a case of Irregularity, exhibiting models, casts, &c.

Dr. E. S. Chisholm read a highly interesting paper on the Diagnosis and Treatment of Nerve Exposure.

Dr. Parker exhibited specimens of peculiar and anomalous teeth.

Dr. J. M. Mason, of Columbus, was elected a member of the National Association.

The Association was treated to a most interesting, eloquent and instructive address by Dr. J. B. Patrick, of South Carolina.

In discussing Operative Dentistry, Dr. Teague thought the theory of the "New Departure" much better than the practice.

Dr. Carpenter highly recommended and thought stannous gold made the best plastic filling. Dr. Patrick also favored the stannous gold, while Dr. Winkler said that the best amalgam he had ever used was made by Dr. Harker.

Drs. Parker and Patrick gave interesting cases in practice, while Ludwig's Cement, White's Agate Cement, Justi's Cement and Fletcher's Porcelain and other plastic materials, were also discussed.

The morning session was closed by a discussion of Nitrous Oxide, or Laughing Gas, and an interesting description of its generation in the liquid form and properties of the condensed gas by M. M. Johnston, of New York.

The subject of Mechanical Dentistry led to considerable dicussion on the merits of rubber and celluloid, there being quite a difference of opinion concerning the latter material.

Among the Voluntary Essays was an interesting paper on "The Dental Profession," by Prof. Jas. B. Hodgkin, of Washington City, D. C.

The Afternoon Session was devoted to Mechanical Dentistry, Therapeutics and Materia Medica.

The election of Officers for the ensuing year was then held with the following result:

President.—J. B. Patrick, Charleston, S. C.

1st Vice President.—L. D. Carpenter, Atlanta, Ga.

2nd Vice President.—V. E. Turner, Raleigh, N. C.

3rd Vice President.—J. B. Wood, Richmond, Va.

Cor. Secretary.—D. E. Everett, Raleigh, N. C.

Rec. Secretary.—E. S. Chisholm, Tuscaloosa, Ala.

Treasurer.—H. A. Lowrance, Athens, Ga.

Executive Committee.—W. H. Atkinson, New York; J. W. Selby, New York; S. J. Cobb, Nashville, Tenn.

New York was selected as the place, and the first Tuesday in September, 1880, as the time for holding the Twelfth Annual Session of the National Dental Association.

ARTICLE III.

The Brooklyn Dental Society.

The Brooklyn Dental Society held its regular meeting at the residence of Dr. Fry, on Monday evening, Feb. 10th, 1879. Vice-President Dr. A. N. Chapman in the chair.

Incidents of Office Practice.

Dr. Rippier: A patient presented himself some time ago to have a left inferior wisdom tooth extracted. It had caused a great deal of irritation in its eruption, the anterior cusp of the tooth pressing against the posterior side of the second molar. Several unsuccessful attempts were made to extract it. It was finally agreed to remove the second molar. The wisdom tooth was loose and could be moved around in its socket, but it was impossible to get it out from its peculiar position. The second molar was extracted, and it drew the wisdom tooth out with it—they both came together. After being cleansed and examined, the second molar was found in the condition you see it, with quite a cavity in the posterior root. I have not the wisdom tooth. The patient took both teeth away and lost the wisdom tooth.

Dr. Atkinson: Is the cavity from friction or decay?

Dr. Rippier: That I leave the gentlemen to judge. I should judge it was from the pressure of the wisdom tooth on the periosteum, causing disease of the bone.

A highly evolved monkey, about 13 months' old, was brought in by one of my patients. The monkey would not eat and was evidently suffering. His master could not make out what the trouble was. His son happened to look in the mouth and the right upper central was found to be affected by acute periodontitis and there was a good deal of swelling of the gum. The monkey did not like the instruments that lay before him. He looked pretty sharp at me. We had trouble to get his mouth open. His master thought it was better to have the tooth out. I desired to save it, but I was not quite certain whether it was a deciduous tooth or not. How were we going to get at it? I finally took what was once the handle of a mallet, and slipped over it a piece of rubber tubing, just about the size of the back teeth, so that he could bite through it and not hurt his teeth, and extracted the offender. It was as black as you see. It was in quite firm. After he got it out, he seemed greatly relieved. He gave one little yell; his master told him to spit, and he did it as gracefully as any one would. The eye teeth were beautifully clean and the gums healthy and the breath so sweet that it would shame some of our patients.

Dr. Atkinson : How old was he?

Dr. Crandell : Thirteen months.

Dr. Atkinson : I guess this is a deciduous tooth. I am not up on monkeyology.

A voice asked Dr. Atkinson's opinion as to the first tooth presented by Dr. Rippier.

Dr. Atkinson : I only had a superficial examination of it, but I think Dr. Rippier has given us the only rational explanation of the condition of things. That the crown of the tooth pressing against the second molar was the cause of absorption of the anterior roots as well as the burrowing into the posterior root.

Dr. Mirick : Would you sacrifice the second molar?

Dr. Atkinson : I don't think I would. If I had known the condition I might have. I never saw a wisdom tooth where it was necessary to remove the second molar to get

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at it. It is only lack of instruments and a knowledge of the anatomy of the part that would lead any one to blunder on that.

Dr. Mirick: I am satisfied, in certain cases, he would sliver the ramus of the jaw a little.

Dr. Atkinson: Take a forcep and go at it. I have taken them out when they were completely covered with bone. In one of my earliest operations I remember distinctly of having to cut through the bony sac to get out the tooth. I succeeded in getting it out, but it was not pleasant either to the patient or myself.

Dr. Fry: There was a very interesting case at the clinic the other day. I should like to hear from Dr. Chapman the circumstances that attended it. I would like him to describe it.

Dr. Chapman: I will try to describe it. The patient was presented to me on Monday of last week with what I diagnosed to be a cystic tumor of the superior maxillary, proceeding from an old abscess. I left her for the clinic on Saturday, at which time I hoped Dr. Atkinson and other gentlemen would be present. At the time of my first examination I recognized a parchment-like feeling. There was a little difference of opinion among the gentlemen. I believe I was the only one who believed the antrum was not involved. I don't think it is. I injected with salt and water and got nothing through the nares or nostril. That was pretty positive.

Dr. Atkinson: What is the appearance of the substance —honey like?

Dr. Chapman: I got nothing of that character.

Dr. Atkinson: Was it hard?

Dr. Chapman: No. I got a dark colored fluid with some "cheesey" admixture. It was not offensive. If any of the gentlemen will come to my office at six o'clock, to-morrow evening, she will be there. She is very willing to be examined; she is a poor girl and I made the suggestion if she would allow me to use her in that way, it would reduce my price of treatment.

Dr. Atkinson: I would like to be allowed to make a remark or two. Many times we have tumors that encroach upon the territory of the antrum that do not involve the antral cavity proper, by reason of forcing in the lining membrane of the antrum, forming a sac, in which the growth is held; it shows the diagnostic ability of the chairman when he gives us proof that is a test for a diseased antrum, or as to its being involved when you inject it and get no flow into the nostril or back into the throat.

Dr. Chapman: We entered the sac through the socket of the palatine root of the first molar tooth.

Dr. Mirick: That would take it pretty direct into it.

Dr. Chapman: I believe by going direct through the center of the palatine root of the first molar you could strike the antrum.

Dr. Atkinson: I have seen many palatine roots of molar teeth that were entirely through the cancellous portion of the socket, and were like little nodules within antral cavity with the blood vessels and nerves running along the membrane penetrating it. In certain cases, if you extract the cuspid tooth you may enter a little projection of the antrum. I can generally tell from the person's external appearance where the antrum would be. The point I wanted to commend was the common sense way that the President went to work to determine whether it was there or not. I am only speaking from general principles, of course. I have not seen the case. There are a great many interesting cases that arise here that the physicians are utterly unable to do anything with. I have a case now, commenced last Summer, that has been said to be cured three times, and the cavity was opened inside of the cavity of the mouth into the antrum as supposed. It was into the antral territory but no discharge from the nose, and none when I made the operation. The case is cured, and the only thing that we are waiting for is the filling in of new material. The operation was such as I always make in those cases, simply burring out of the bone to healthy tissue, and as I have said many times, reducing an old sore to a clean wound.

Dr. Chapman: What would be the treatment for this case of mine?

Dr. Atkinson: I should simply wash out with warm salt and water until it came out clean, take out what did not belong there, and after that wet completely all over the sides of it, either by injection or a wad of cotton saturated with chloride of zinc, which I use where I wish union by first intention. It makes a bond of union that is the best I know of.

Dr. Mirick: This case of Dr. Chapman's recalls to mind a similar case. A young lady who came from New Orleans, just before the war, who had been in the hands of several physicians who had treated her for enlargement that was throwing out the cheek. She had been sent North to be put under treatment of some celebrated surgeon. She came to Brooklyn, and her physician recommended her to me. I examined the case, and I thought it was pretty serious. It looked to me a great deal as Dr. Chapman's. In examining closely, the bicuspid appeared to have been extracted. The gum looked healthy. I examined around the gum and I made a little opening here, which gradually wormed itself into the gum for about an inch and then struck something which I had no difficulty in diagnosing as the root of the tooth. By working at it I got underneath it and drew out the end of the root. It was the root of one of the bicuspids. In a fortnight, as Dr. Chapman says, there was a perceptible improvement in the protuberance. She returned South, and I did nothing further with it. After the war closed the young lady came to see me, with her face in an entirely normal condition; nothing was done except taking out that little root; and to my mind instead of working downward it appeared to work upward, causing this trouble. It was further up than I should expect to find a bicuspid root. Her friends came to me before they went away and wanted my bill, expecting I should charge $500 or $1,000, but I charged them fifty cents for extracting the root, and have been mad at myself ever since.

Dr. Chapman: This is the fourth cystic tumor that has been in my hands. The first I have not a very clear recollection of. The second was a small one which I cut into and stopped and plugged with cotton saturated with iodine. Another was a very large one. In opening it I saturated the parts with iodine and sulphuric acid, and it gave the patient a great deal of trouble which he did not have before I commenced to work at him. It is gradually decreasing, but there was an opening in the mouth and there is a discharge.

Dr. Atkinson: There is dead bone there, and as soon as it is dissolved away or removed artificially it will get well. There is a necrosed condition there that keeps up the discharge.

Dr. Chapman: Is there any risk in leaving it as it is?

Dr. Atkinson: Nothing but the waste of time.

Dr. Farrar: I have now under treatment a case.

Dr Chapman: Do you find the antrum penetrated?

Dr. Farrar: The chamber is not involved, but I can take a probe and push the lining membrane up into it. The outer plate of the superior maxillary along against the bicuspid teeth is decalcified, so bulged that it is forcing the cheek out, and as I press upon it it springs in as the bottom of a tin pan might be sprung in. It feels like cartilage, elastic. Is not rigid, and has a metallic feel. I am treating it from the outside of the gum, and to prevent the shell from remaining bulged out I am gradually forcing it in. To-day I sprung it in about a quarter of an inch. I propose to give anæsthetics and heroically force the shell in at one sitting. If we do not do that, the sac will probably fill up and the deformity remain through life.

Dr. Chapman: Don't you expect that outer plate will be dissolved away now?

Dr. Farrar: No; but I think it is becoming more and more decalcified. I look now for new formation and filling in of the space. It is about the size of a pigeon's egg. It is an interesting case, because it originated in a blind ab-

scess and was seven years forming, never breaking out. I told the patient three years ago to treat it but she thought she would not. Up to a year ago it was nothing noticeable in size. I had a blind abscess in my own mouth that was five years burrowing in that way. About three or four months ago it was the size of a half filbert, and I experimented on myself. I tried the most radical means of treatment, and cured it in two or three weeks.

Artificial Dentures.

Dr. Scott: For cheap dentistry give me celluloid.

Dr. Chapman: Do you find it permanent?

Dr. Scott: Permanent, yes, sir; I will show you plates that have been in use six years and are good yet.

Dr. Andrews: Do you not find any trouble from the secretions of the mouth?

Dr. Scott: No; it will not soften.

Dr. Walker: Do you find any trouble from warping?

Dr. Scott: It will not warp if it is properly made. I made in July 37, August 40, September 37, October 40, November 34, December 37, January 43. I have not made a failure so far. "Never had to make one over." There is not one that I know of that is broken. I don't claim to have the best patients in the city. I have as good as the rest. For cheap work, celluloid will give better satisfaction to the public than anything else. For permanency I think there is nothing equal to gold.

Dr. Chapman: Do you use a dry press or steam?

Dr. Scott: Steam.

Dr. Mirick: You don't have any that need repairs?

Dr. Scott: Oh, yes! It fails the same as gold or rubber plates fail. I have had three this last week. Everything breaks, and celluloid for cheap work is better than rubber. The great trouble is that you make two or three sets, and you fail and you drop it. You don't keep on. Look at the work on rubber. It is the easiest thing to use. You can't make a mistake if you understand it.

Dr. Fry: I got acquainted with a dentist some time ago, and he says, "Do you use celluloid?" I replied, "No, I don't, although there are now very good men trying it; but when plates come back I don't like the looks of them." Said he, "It is the best stuff you ever saw." Pulling out a set of teeth, he says, "Look at them. Don't you think they are splendid?" It was a vile thing.

Dr. Andrews: I find there is considerable difference in the oral secretions in different individuals. For some mouths the material is softened. As a rule, I have found a strong pressure in every case essential to make a union.

Dr. Fishbough: I have used celluloid the last six years. I have made some failures, that is to say, there have been two or three special sets of celluloid that have come back to me that were blackened, grown black in the mouth by wearing. I cannot refer that change to any cause very definitely; but I do find there is an advantage; that it improves celluloid if—before you commence to screw down the flask—you allow your fire to go out, to allow the process of cooling to be set up. It seems to condense it; closes the pores and prevents that absorption of the fluids of the mouth that is liable to take place if you complete your operation while the piece is very hot. I think every one, by a moment's reflection, will see the common sense of that, and I believe many of the cases of failures have been owing to the application of too high a degree of temperature. A heat above 280° I think tends to destroy. I think it is better and safer to use a moderate heat.

Adjourned. —*Johnstons' Dental Miscellany.*

ARTICLE IV.

American Nervousness: Its Philosophy and Treatment.

BY GEORGE M. BEARD, M. D., NEW YORK.

An Address delivered before the Baltimore Medical and Surgical Society, February 12th, 1879.

Gentlemen:—If our fathers in medicine of the last century could be brought from their graves to this room this

evening, and be told of the subject that has brought us together, the first question they would ask would be, "What is meant by the term nervousness?" They would say, and very truly, that the Greeks had no word for nervousness as we now understand that term; and that even down to the eighteenth century, nervousness was supposed to mean irritability of temper, disposition to anger, excitability—a mental quality, and not a physical disease. In reply, we should be obliged to say that in the nineteenth century, nervousness meant nervelessness, nervous exhaustion, abnormal susceptibility of the nervous system to internal or external irritants.

American nervousness, during the past half century, has expressed itself by a large variety of symptoms, a number of which are so frequent, so positive in their character, and so important, that they have given names to disease, and are known as such. Among these symptoms and expressions of modern nervousness are neuralgia, sick headache, nervous dyspepsia, hay fever, and, above all, *neurasthenea*, or nervous exhaustion in all its various forms. These conditions, with others that might be mentioned, constitute a family of nervous diseases that have developed chiefly during the last half century—at least, during the present nineteenth century—and are most abundant, and most severe and most varied in their manifestations in the northern portion of the United States, although they are found in, and are now extending to England and the Continent of Europe.

The rise of this family of functional nervous diseases brings a new era into medicine and sociology, for it has no precedent in the history of mankind. The ancients had no nervous disease, or almost none, save a few cases of insanity and epilepsy here and there; and our moderns knew little or nothing about them until the present century.

The scientific proofs of this unprecedented nervousness of the Americans during this generation are very numerous. I will mention but a few.

First of all, there is the *increased sensitiveness to cold and*

heat, which is observed among all our brain-working classes. Our fathers were content with a temperature of 60° F. We must have, to be comfortable, a temperature of at least 70°; and there are many families who keep their rooms at even a much higher temperature. In other words, we are 10 degrees more sensitive to cold than were our fathers. The heat of our summers is no greater than it was a century ago; but the cases of sunstroke and heat prostration are widely out of proportion to the increase in our population.

Note also our sensitiveness to stimulants and narcotics, as alcohol and tobacco, and even tea and coffee. Not only our fathers but our mothers, could drink freely of wines and stronger liquors, and even smoke as much as they wished, without developing any of the nervousness of our time. At the present time, a very considerable proportion of the population of this country are unable to smoke, or chew, or drink even mild wine, or tea or coffee—especially the latter—without making themselves perceptibly worse thereby. I find that a very considerable number of my nervous patients have been compelled, before I see them, to give up their coffee and tobacco. All this is modern and pre-eminently American. Likewise the idiosyncrasies of patients in regard to the action of medicines and the effects of drugs and various external irritants, have during the last half century, multiplied in variety and phase, and greatly augmented in number. There are thousands who cannot bear opium—who are kept awake instead of being put to sleep by it. The ordinary dose for an adult is sufficient to deprive them of a night's repose. One very eminent physician finds that even chocolate, one of the mildest beverages, is a poison to him; and another experienced physician who consulted me one time in regard to himself, could not, he said, bear anything that I prescribed. I spoke of iron; he said iron, even in small doses made his head ache; and when I tried it, even with other medicines, it produced that effect. I suggested quinine; he said quinine made him crazy. I tried a zinc combination; it disturbed his stomach. And

yet this man, so variously sensitive, was actively engaged in one of our most laborious professions.

One of the very best signs of our civilization is found in the *premature decay of our teeth.* Special explanations, without number, have been offered for this long-observed phenomenon—such as the use of sweets. the use of acids, neglect of cleanliness, and the use of food that requires little mastication. But they who urge these special facts to account for the decay of teeth of our civilization would, by proper inquiry, learn that the savages and negroes, and semi-barbarians everywhere, in many cases use sweets far more than we, and never clean their mouths, and never suffer, except in old age, from cavities in the teeth. The cause of the decay of teeth is subjective far more than objective—in the constitution of the modern civilized man. Similarly, also, with regard to irregularities of the teeth, which, as is now known, ar· dependent on bad nutrition of the jaws.

Delicacy of digestion is one of the best known and first observed effects of civilization upon the nervous system. The history of the *rise and fall of pork as a food* is itself most instructive on this point. Pork, like the Indian, flees before civilization. In all the great cities of the East, among the brain-working classes of our large cities everywhere, pork in all its varieties and preparations has taken a subordinate place among the meats upon our tables, for the reason that the stomach of the brain-worker cannot digest it. Three times a day, and every day in the year almost, pork in some form was the only dependence of our fathers in the last generation, who could eat it freely without ever asking themselves whether it was easy or hard to be digested. This dethronement of pork has had, and is still having a disastrous effect upon the American people; for, as yet, no article of food with a sufficient amount of fat has been generally substituted; and fat in our dietaries is one of the most imperative hygienic needs in our time, and which has become to be felt, both instinctively and ration-

ally, and which, on all hands, we are trying to meet by the use of cream, cod-liver oil, eggs, fish, and the fats of fresh meat.

The *eyes*, also, are good barometers of our nervous civilization. The increase of asthenopia and shortsightedness, and, in general, of the functional disorders of the eye, are demonstrated facts and are most instructive. The great skill and great number of our oculists are constant proof and suggestions of the nervousness of our age.

In this sensitiveness of organization, the *reproductive system* ever shares. One of the many evils of our time, we are told, is, that the habit of self-abuse is on the increase, and that men are more indulgent than formerly. Hence the increase of nervous diseases that are connected with the genital functions; and hence the terrific results that sometimes follow early begun and long-continued masturbation. But so far as can be learned from all sources of information on these difficult themes, it would appear that among savages and the semi-civilized, sexual abuse, both in a natural and unnatural way, is carried to a higher degree, on the average, than among the civilized; we cannot, indeed, bear these abuses as our fathers could. The observation of Bulwer, that it requires a strong constitution to be dissipated, is a just and sound one. The modern young man is not strong enough to abuse himself as perhaps he would be willing to do, or as his ancestor did. Both natural and unnatural methods of sexual indulgence react with fearful and almost immediate power on the nervous system, with symptoms which, through the labors of charlatans, have become familiar as the songs of infancy. In marital intercourse, we are compelled, as a rule, to exercise a caution and a moderation of which our ancestors knew nothing.

The world inquires why diseases of women increase, and many special causes are assigned; but the one great cause, to which all others are subordinate, is civilization.

The question often agitated is, Whether diseases have changed their type in modern times? This is a question

which should not be discussed; to raise it, is to answer it. There is no question but that diseases have changed their type in the last half century. The only question is, What are the degrees of the change, and what are the causes which produce these results?

It is demonstrable that nervous diseases have increased in recent periods; and that, with this increase of nervous symptoms, there has been also an increase in the asthenic forms of disease, and a decrease in the sthenic forms; and, correspondingly, that there has been a change in the methods of treatment of diseases; that neurasthenia—nervous susceptibility—has affected all, or nearly all, diseases, so that nearly all illnesses occurring among the better class of people—the brain-workers—require a different kind of treatment from that which our fathers employed for the same diseases.

The four ways by which we determine these facts are—*first*, by studying the literature of medicine of the past centuries; *secondly*, by conversation with very old and experienced practitioners—men between the ages of seventy and ninety—who link the past with the present generation, and remember their own personal experience and the practice of medicine as it was fifty years ago; *thirdly*, from our own individual experience and observation; *fourthly*, by studying the habits and diseases of savages and barbarians of all climes and ages, and of the lower orders about us.

Statistics on this subject are of very little value, for reasons that will be clear to those who are used to statistics, and who know how they can be handled. Longevity has increased almost *pari passu* with this increase of nervousness and change in type of disease, and this has been a stone of stumbling and rock of offence to those who have discussed this subject. Both facts are true; longevity has increased among the brain-working classes, and nervousness has also increased. These two apparently opposite facts are harmonized by a third factor which those who have studied this subject failed to reach—namely, nervousness is not only

consistent with longevity, but actually favors it, by preserving the system from attacks of acute inflammatory disease. We do not bear blood-letting now as our fathers did for the same reasons that we do not bear alcohol, tobacco, coffee, opium, physical pain and sexual indulgence as they could. The change in the treatment of disease is a necessary result of the change in the modern constitution. The old-fashioned constitution yet survives in numbers of people; and in such cases, the old treatment is oftentimes better than the modern treatment.

The diseases of savages can be learned from books of travel and from conversations with travelers. Many of these books, it is true, are of an non-expert character, so far as the diseases of the savage tribes are concerned; but some of them are written by physicians and scientific men of various degrees of eminence, whose observations on a large scale, compared together, enable us to arrive at the approximate truth. In the study of this subject, I have compared a very large number of books of travel, and I have arrived at this fact, in regard to which there can be no doubt whatever, namely, that nervous disease scarcely exists among savages or barbarians, or semi-barbarians, or partially civilized people. Likewise, in the lower orders in our great cities, and among the peasantry in the rural districts, muscle-workers, as distinguished from brain-workers —those who represent the habits and mode of life and diseases of our ancestors of the last century—nervous diseases, except those of an inflammatory or syphilitic character, are about as rare as they were among all classes during the last century. These people frequenty need more violent and severe purging, more blood-letting, more frequent blistering than the higher orders would endure. If we would compare the nervous diseases of our time with those of the past, we have only to look about us among those classes of people whose temperaments take us back a half or three-quarters of a century; in these classes such diseases as neurasthenia, heavy fever, sick headache are very rare indeed; so that it

is very difficult for a hospital for nervous diseases to succeed in getting a sufficient number of patients of this character. On the other hand, hospitals for inflammatory and febrile diseases are enormously patronized among them. It is partly for this reason that the literature for nervous functional diseases is so poor and unsatisfactory. Our medical books and lectures are made up far too often of hospital, charity and dispensary practice.

[TO BE CONTINUED.]

ARTICLE V.

Duplicating Vulcanite Plates.

BY W. R. HOLMES.

In casting about for a subject, I have not sought a very scientific one, as the above heading plainly shows, but chosen one which may be of practical benefit to some practitioner.

My mode of duplicating a plate, on vulcanite base, may not be entirely original, but I have no doubt to some it will be new, and when learned will be of value to them. Each of us can learn something, one from the other. Each dentist stumbles, as it were, in the practice upon some particular mode of performing a piece of work, which may in itself appear a trifle, yet is invaluable for that special purpose.

Every dentist also has his own peculiar way of operating upon the natural organs of mastication, his own peculiar way of supplying these organs by artificial means when lost, some particular way of taking an impression, some peculiar and original way of obtaining the articulation of artificial dentures, some particular way of vulcanizing, some peculiar way of finishing; each and all of us have our hobbies; we acquire them we know not how, nor why. All these are little things, it is true, but to us very essential to insure ease and facility in operating and to secure success.

Let us, then, exchange ideas, whether they be as "grains of sand or seeds of pearl." Life is made up of little things.

It is the atom that makes the great world. It is the chemical elements that make cells, cells that make tissues, tissues that make "the human form divine."

The teeth are small things and yet how vastly important for health, beauty and comfort! It is apparently a small thing to operate upon them, and yet how much skill is required to preserve them successfully. It is the little virtues of men and women that make them the great men and women of the world, and the kindness we exhibit toward each other that helps to make this life pleasant and agreeable. It is so in science, it is so in mechanism, it is so in dentistry. It is a little thing to say, "keep your excavators and pluggers sharp, and see that they are in order before you commence upon a tooth," but upon that depends the perfection and finish of your filling. It is a little thing to say prepare well the corners and edges of your cavity, but upon that depends the durability and permanence of your plug. It is a little thing to say "be sure that your fillings are kept entirely free from moisture," but upon that depends the thorough welding or uniting of the particles of gold. It is a little thing to say be patient, be thorough, be careful, be strong, and give every one who employs you your best gifts and services, but upon that depends your success as a dentist. It is a little thing to say be clean, be modest, be manly, but upon that depends your acceptability as a dentist. These things are to the dentist what the rain and dew are to the plants and flowers; they serve to make them flourish and grow, and become ornaments to society and the world. So it is in artificial dentures; the little things are the final adjustments or articulation—to see that every tooth impinges against every other tooth so that mastication is perfect—to see that the shade of the upper artificial teeth are the exact shade of the under natural teeth—to see that in the full sets the size, contour and shade are perfectly adapted to the complexion and suitable to the general appearance of the patient. They, too, are little things, and yet how necessary to obtain that naturalness so much to be desired by the patient and the ambitious dentist.

After the dentist, by the observance of all these minor points, as well as the larger ones, has made a beautiful set of artificial dentures, and they are inserted in the mouth, if his work has been well done and the patient seems pleased, he gazes upon his handiwork with feelings of pride and exultation, as some master artist when, upon canvas, he has painted the gorgeous mimicry of nature; or some sculptor, when he has hewn from the rough marble a perfect model of nature. It is apparently a little thing to exhibit so much pride about, and yet the dentist should be pardoned for such an indulgence. If he has pride and ambition he feels that he has accomplished a great good, and supplied a loss that would be unbearable did not he, by his art, come forward to the rescue. The work finished, the patient goes home delighted and happy in his possession, and the dentist rejoices at his success.

Time—that rude unobserver of rights and privileges—passes, and some day that beautiful piece of workmanship is carelessly allowed to fall and be broken to pieces; or perchance, in the mouth, from some cause, is made to snap asunder, or a block of teeth broken. The plate is returned to the dentist, and he looks and finds his beautiful work a mere wreck of its former perfectness. What must now be done? Usually, a new plate is made, or the parts are placed together with wax, the plate invested in plaster in the flask, separated, holes drilled through, new rubber put in, and the parts brought together, vulcanized and finished. Then again, the rubber solder is used to make the rubber stick to the old plate. This makes a good patch job, but the former beauty and strength is gone. How can this be remedied? I have fallen upon the following plan or *modus operandi:* When a plate is presented, it matters not how badly broken, so the pieces are all on hand, we unite the broken parts together with wax and model nicely, then mixing some plaster and pouring it into the lower section of the flask, press the plate into it, teeth looking downward, allowing the plaster to come up above the gums of the teeth;

we slope it off towards the rim of the flask, then varnish and oil are applied to the plaster, the inner side of plate being kept perfectly clean and free from plaster, varnish or oil. The second section of flask being now placed in position, the plaster is mixed and poured in and the flask carefully shaken until we are assured that every part of the plate is thoroughly covered. It is then allowed to harden perfectly. The vulcanizer is now filled half full of water and heat applied; when steam is raised, the flask is put therein. It is allowed to remain until it is thoroughly heated by a considerable amount of steam. The flask is then quickly removed, and rapidly, though carefully separated, and as soon as this is done, the rubber, which is now found in a semi-soft state, must be pulled hurriedly, though with some degree of care, out and away from the teeth and pins. It usually yields from them as readily as gutta percha base plates, and leaves the teeth intact, and pins clean and nice for packing. If it does not yield readily, heat it again and remove as before described. After this is accomplished, cut ways for excess of rubber; pack, vulcanize and finish in usual way. I have had such fine success by this method that I now never attempt to mend a plate in the ordinary way, but always duplicate. I find it requires less time, is decidedly more satisfactory, and usually for fee charge, half price of a new plate. It is every whit as perfect as a new one. If a section of teeth is broken off I fit a new one in place, model with wax, imbed in plaster, and proceed as before described.

There are no doubt some to whom this method will be new, and if I have succeeded in giving them any new ideas on the subject of duplicating vulcanite plates, I will feel that I have been fully compensated for the efforts of this paper.—*Dental Luminary.*

ARTICLE VI.

On Cysts of the Mouth.

Mr. Francis Fox read a paper before the British Association of Dental Surgeons, on "Cysts of the Mouth." After alluding to the oral mucous membrane being not infrequently the seat of cystic disease, owing to the numerous small glands and follicles in this situation, and that the mere occlusion of the duct of one of these may give rise to the formation of a more or less extensive tumor, Mr. Fox observed that these cysts may be congenital, or may rise subsequent to birth, in consequence of some morbid action set up in the mucous membrane. The term "ranula" has been, and still is, applied to all cystic formations in the sublingual region, and he could not suggest a more appropriate appellation, provided we do not associate the name with any special pathological change, but regard it as simply descriptive of the impression which such tumors make upon the observer. Ranula, then, may depend upon (*a*) obstruction of the outflow from the minute follicles or conglobate glands; (*b*) it may be connected with the Whartonian, or one of the larger ducts, or (*c*) it may be in no way connected with the mucous structure itself; (*d*) it may depend upon inflammation of the bursa, which is placed between the genio-hyoglossi muscles. Similar cysts to these ranulæ occur in the mucous membrane of the lips and cheeks, and are often met with on mucous surfaces in other regions of the body. Their treatment is simple. If due to local inflammation, a small puncture will quickly effect a cure; or, if the orifice of the duct can be discovered, a small probe may be inserted; or if arising from a salivary calculus, an incision into the duct will permit the easy removal of the concretion. If the enlargement be excessive, a seton of a few threads of silk may be passed through the tumor, so that the contents will gradually escape, and inflammation be set up. This may give rise to an excessive amount of

inflammation, and occasion much secondary mischief, and a better course of procedure might consequently be to puncture the tumor, and then apply caustic to its internal surface. It may be necessary to remove a portion of the cyst wall, in which case the more vascular portion of the tumor should be avoided. Ranula connected with the duct of the sub-maxillary gland is dependent upon dilatation of its coats, in consequence of obstruction at its orifice or in some part of its canal. Calcareous deposit is the commonest cause of obstruction, and these salivary calculi attain often a very great size, and are amenable to the same treatment already mentioned. There is still some difference of opinion with regard to the exact pathology of these sublingual cysts. Some maintain that they are invariably connected with the large salivary glands; others, that they occur quite independently of these ducts, and are, or nearly resemble, "mucous cysts." The fluid which they contain does not resemble saliva in its chemical composition, and there is an entire absence of the sulpho-cyanide of potash, which is so constantly found in true salivary secretion. Ranula situate in the submucous tissue is generally larger, and closely resembles sebaceous tumors, and contains a thick, putty-like substance, composed of epithelial scales, cholesterine, and oil globules. It is of rare occurrence, and the cyst walls are usually very thin and more or less adherent to the neighboring tissues. The removal of the entire sac and contents is the most satisfactory treatment where practicable. Ranula arising from an inflamed bursa should be treated on the principle of destroying the secreting surface, and thus curing the disease. Sanguineous or venous cysts are of rare occurrence in the mouth; when, however, they do occur, they are usually seen on the lips near to their free border. Sir James Paget regards them as "dilated portions of the blood vessels, shut off, as it were, from the main stream." They are usually congenital, and, as a rule, do not increase in size. When small and superficial they may be dissected out but when deep-seated a ligature or

seton will often effect a cure. Cysts known as dentigerous cysts are usually confined to the alveolar portions of the maxillæ, and do not come within the scope of the present paper. Cysts formed in the tongue itself, and consisting of dilated mucous follicles, are difficult to diagnose, and may readily be mistaken for malignant disease. A puncture with a grooved needle will generally solve any doubt as to their nature. Their treatment consists in opening the sac and irritating the lining membrane by means of a probe or otherwise.—*Med. and Surg. Reporter.*

ARTICLE VII.

Dental Physiology.

BY DR. E. PARSONS, OF SAVANNAH, GA.

Read before the National Dental Association, July 8th, 1879.

You are aware that many volumes have been written upon this subject. I have neither the time or ability to do justice to it. It is generally divided into Human, Animal and Vegetable. A thorough knowledge of all these is of great advantage to those who are engaged in any branch of the healing art. You will bear with me, however, if I only submit for your consideration a few thoughts on the constitution and use of the glands of the mouth. But in doing this, in order to show their use, without which the subject is a very dry one you will excuse me if I trench a little on the sciences of Chemistry and Pathology. I present for your consideration the glands of the mouth, first simple, second compound, third mucus, fourth serous.

First.—A simple gland consists of a faliculous or small sack of globular form, with blood vessel and nerve, and possessing an absorbant property, by which means it secretes the fluids proper to its office, and by a pulsatory motion it excretes the fluid it has prepared in its little chemical laboratory, through a very minute duct.

Second.—A compound gland is a number of simple glands excreting their contents into a common duct.

The Paratoid, sub-maxillary and sublingual glands furnish the mouth with a good lubricating substance, known as saliva, as it contains more or less lactic acid; when swallowed is a great aid in the ordinary process of digestion. These glands according to the best authors secrete from fourteen to twenty ounces every twenty four hours.

Third.—The whole mouth and tongue is covered with minute mucus glands, each one of which act singly, but in their aggregate are called the mucus membrane. They resemble in their structure the capillary glands of the skin. Their office is to secrete mucus and if not interrupted in their endeavors, they furnish the mouth with a substance much resembling the white of an egg, and gives to its surface a smooth, and agreeable sensation; it also gives a smooth and easy passage of our food to its point of destination.

Fourth.—The serous glands, usually called the serous membrane, are exceedingly small, but capable of absorbing serum from the blood and excreting the same in a highly purified state, slightly acidulated; the substance is transparent and as limpid as the purest water. In the normal state these ducts can only be seen by the aid of a good microscope. Like the mucus glands they are present in all the surfaces of the oral cavity. Their use is to liquify the excreted mucus and prevent it becoming ropy. When these glands become diseased by secreting too much lactic or other acids, the little ducts become inflamed, the mouth of the duct turns outward in a rose form, and often run together and form what is called a canker sore. This in my opinion is the cause of nursing sore mouths. A preparation of Glycerine and Carbolic Acid, say to one ounce of the former add twenty drops of the latter and applied with the finger or a swab, two or three times a day, will usually effect a cure in three or four days. The same is a very efficient remedy for a common sore throat and is almost a sure cure for tonsilitus, if properly applied.

If all the glands of the mouth could be kept in a normal condition, the Dentists' occupation would be gone, unless

the breath should become acidulated in the lungs and passing through the mouth should have a deleterious effect on the teeth.

Although the act of breathing and its effect on the glands of the mouth and teeth may seem to be foreign to our subject, a few words on the subject may assist us to better understand, at least one of the causes of diseased action. In the whole animal kingdom, I do not know any animal except man that sleeps with the mouth open. Both nature and revelation teach us that man was made to breathe through his nostrils. While speaking or singing we all more or less inspire and expire through the mouth, but this occupies but a small portion of our time, and here let it be noted, that most incessant talkers have bad teeth.

The air we breathe is composed chiefly of Oxygen, Nitrogen and Carbon, nearly all the Oxygen is retained, and part of the Nitrogen ; the Carbon is expelled when we perform the act called breathing. Let any person inhale the air through the mouth, and the little ducts of the mouth and tongue will close up and effect a cool and dry sensation, but when the air passes through the nostrils no such sensation is experienced. The blood being rarified and in a measure purified in the lungs by Oxygen, the Carbon unites with these impurities and is expelled, producing what we call an acidulated breath, and if the breath is constantly passed off through the mouth as is the case of one sleeping with the mouth open, the superior front incisors must be of extraordinary good quality not to be affected by it; the inferior incisors are protected by the tongue and do not often suffer. Cases frequently present themselves for treatment where we find the superior front teeth decayed, and the back teeth sound, and then again the reverse is the case. I often make inquiry into the habits of such patients, and generally find that the former sleep with their mouths open, and the latter with them closed. The front teeth I conclude are disintegrated by the acidulated breath and the back teeth by an acidulated secretion of the salivary glands.

Again, sometimes one side of the mouth and teeth appear healthy and the other side diseased. Upon inquiry I am generally informed that the person sleeps lying upon the side affected. So long as the secretions and the breath are in a normal condition, it is not important how we sleep, provided we keep our mouth closed. Until we understand all the causes of disease to which the oral cavity is liable, we shall not be prepared to give such advice as our patients stand most in need of.

It is not our purpose in these remarks that you should keep your mouths shut at this meeting, but on the contrary, that you open them and freely ventilate your ideas on this, and all other subjects that may come before us.

ARTICLE VIII.

The Duties of the Dentist.

BY W. W. FORD, MACON, GA.

There are few, if any, of the callings of life that makes a greater demand upon both the mental and physical powers of man, than that of dentistry. It is a profession that not only employs and severely taxes *all* his mental faculties, but it taxes to their extreme limit every physical energy of which man is possessed; every muscle, ligature and fibre in his entire body is brought into constant action of the most trying nature while he is performing his professional duties.

The dentist who serves his patients faithfully and conscientiously all through the long, weary day, is, at its close, not only very tired in body, but his eyes and all his mental energies are completely exhausted. Therefore, dentists, as a class, do not live to be very old men, "and if by reason of strength" they should live to pass three score, they are, or have to be, laid upon the shelf, so far as their professional duties are concerned, for they are no longer physically capable of performing its most arduous and fatiguing duties.

There are no class of men in any of the learned professions that wear out so soon, or so completely as the dentist

does. I claim, therefore, to make a dentist—that is a success—you must have *a whole man*, both mentally and physically, to make him out of; there is nothing belonging to him proper that you can dispense with in the make-up; you may then make only a piece of a dentist out of your whole man, but you cannot possibly make a whole dentist out of a piece of a man. He must have the physical development in body necessary to enable him to endure the great fatigue attending the faithful performance of his professional duties; he must have a correct, close-seeing and fine discriminating eye; he must have a skillfully trained ingenious hand, that is capable of the most delicate touch, not only in handling his patients, but also in handling his instruments and appliances in such a manner as to mould and form his work so as to make it not only the most beautiful and natural in appearance, but the most durable and lasting; he must have a clear mind, a close, discriminating intellect, a good sound judgment, to teach him when, where and how to operate and treat the varied cases that come before him; and above all, and over all, he must be honest, trustworthy and conscientiously faithful to do all that he can do for the redemption and salvation of the dental organs of his patients; he must be mild and gentle in his manner and deportment to his patrons, or those who visit his office; he must be easy and sympathizing in all cases where he has to inflict pain, letting his patients know that he feels and fully appreciates the fact that he is working upon live tissue and nerves; he must not be impatient, rude, uncouth, or unkind to, or with those that require his services. Thus he must deport himself, not for one day only, but every day, and every hour of the day, whether he feels like it or not, sick or well; if he is able to be on duty these things must be done, however trying the case may be; however simple or foolish his patient may act; however cross-grained and unwell, tired and weary, and worn he may feel, he must not let anything betray him into saying an impatient word or giving a cross look; the public demand that their dentist be always in a

good humor, and be always fresh, smiling and ready for their most unreasonable demands at any time they may find it convenient to make them.

Now, if it does not take a whole man, and a very good one at that, to perform all these things, then I would like to know what part of his mind, soul or body it is that is left unemployed.

The duties of the dentist is the more trying and wearing upon the human organism because it is not strictly mental or manual labor alone; but is both of them together, taxing at the same time, every energy of the mind and body; consequently, it is impossible for the body and the vital energies to bear such a strain for a very long time without giving away; hence, there be few, if any dentists, that ever live to see old age.

I do not say that every dentist in this country is wearing himself out, either mentally or physically, in the performance of dental duties. I wish I could say more of them were than there are, because such service is absolutely necessary to reach that high standard of success and proficiency which we all desire to attain, and see attained by every member of the profession. Dentistry, to be a success, is a profession of work, struggle after struggle, combat after combat, never yielding the field, never giving up, but constantly pressing onward and forward; no time to lay down your instruments and fold your hands, work whether you have a patient or not; if you have no patient's mouth to work in, work in and on your own head; be training your hand to do what you have failed to accomplish before in the efforts you have made; search diligently with all your mind for those obstruse facts which you have not yet mastered in connection with the hidden mysteries of the "human form divine." And this advice is not given to the young members alone, either, for I never have yet seen the dentist that was so wise, mature, experienced and skillful, but what there was something in either science or art connected with dentistry for him to learn. "Work," "work," "work," is

the inexorable decree of our profession, and he that is not ready and willing to do it had better stop at once; he has been mistaken in selecting his calling; he will never succeed, and he had just as well quit, and no longer deceive himself and the public by trying or pretending to do something that he is too lazy to do.

A lazy, good dentist I never saw in all my life. I have seen lazy men claiming to be dentists, but it was all a mistake, they were not dentists, nay, not even a half dentist; such a man may get the name and float along through life perfectly content just to know enough to do more harm than two industrious, energetic, skillful operators can undo or repair. Such men have just energy enough to ruin teeth, and not enough to save one.

How important our duties are; how much we have to accomplish; how varied, and intricate, and difficult a great many of our operations are; how skillful, how ingenious, how careful, and particular, and conscientious we have to be to do our whole duty and succeed.

Then, I say, we have but little time and talents to spare. Let us, of Georgia, be up and doing, and let our highest and only motto be good work, true work, and not who can do the cheapest, and consequently, the poorest and meanest stuff that can be palmed off upon a credulous community, thereby disgracing yourself, and the profession that you claim to be an honorable member of.—*Dental Luminary.*

EDITORIAL, ETC.

Thimble Blistering as a Vehicle for Morphia.—J. C. Watson, M. D., of Va., calls attention to a simple method of administering morphia locally, which may prove useful in facial neuralgia where that drug is indicated,—a method which dispenses with the use of the hypodermic syringe. It consists in loosely filling an ordinary sewing thimble with raw cotton and saturating this with strong ammonia water, (ammon. fort.) and pressing the charged thimble on the skin at the spot where it is desired the morphia shall act. In a few minutes a sensation of heat is felt, when the thimble should be removed and the spot gently wiped off to remove any of the ammoniacal liquor. The skin will now be found to have been blistered, and the cuticle can be rubbed off. Dry morphia can now be gently rubbed in, adding a drop of water. This method of blistering is not new, but it furnishes a convenient method of applying morphia and getting rid of the syringe. The blister alone, on the temple or on the gum will be occasionally useful as a counter-irritant in periodontitis, and has the merit of expedition, and is possibly as useful as the irritation produced by cantharides; certainly much less disagreeable.

The writer remembers once promptly relieving a severe periodontitis by making a slight incision over the root of the troublesome tooth, withdrawing the glass barrel of the hypodermic syringe from its metallic case, with the piston in position pushed down as far as it would go, and placing the end of the glass tube over the cut, very slowly withdrawing the piston. Blood followed until the barrel was filled. Great relief resulted. The pain of pressing the tube upon the inflamed surface is the great obstacle in the way of using this "artificial leech," but this might be mitigated by the use of some local anæsthetic. If a longer tube were used, so as to allow the abstraction of more blood, the efficiency should be as great by this method as by natural leeching, to which most patients have an unconquerable aversion.

A very useful local anæsthetic for outward application is made by rubbing together in a mortar equal parts of chloral hydrate and gum camphor. The two solids thus compounded make an oily liquid, which rubbed on the skin is quite effective. Long use of this, or confinement under a bandage or compress will blister very decidedly. H.

Premature Decay of Our Teeth.—Geo. M. Beard, M. D., of New York, in the article on "American Nervousness," takes the ground in reference to the premature decay of American teeth, that the cause is subjective rather than objective—is in the constitution of modern civilized man. A doctrine undoubtedly correct. The dentist of the present is a necessity, growing not out of our habits, but out of our climatic influences and constitutional developments, and will, in the future, be still more a necessity.

H.

MONTHLY SUMMARY.

New Sources of Rubber.—The director of Kew Gardens (Eng.) has given much attention to the matter of extending the sources whence this valuable product is obtained. In his annual report he states that though a large proportion of the young plants of the Para rubber (*Hevea Braziliensis*) brought to Kew failed to thrive, seeds and plants of the Ceara rubber have been obtained, and a considerable stock successfully raised. Para rubber plants have been transmitted to Calcutta for distribution to Assam and Burmah, where, it seems, they are now doing well. Favorable reports have also been received from Singapore, where it is said that, judging from the progress the plants have made, the climate is evidently suited for their growth. The same may be said of Ceylon, whence the superintendent of the government garden reports that cuttings of *Hevea* strike readily, as well as those of *Castilloa* and the Ceara plant.

In Jamaica, also, the plants of *Hevea* are doing well. The propagation of the Central American rubber plant (*Castilloa elastica*) is still being proceeded with at Kew, and during the past year plants of this species were sent to Liberia, Mauritius, Singapore, and Ceylon. The Ceara rubber, owing to its totally different habit from that of the other two species, will, it is

thought, prove to be the best fitted for cultivation in Bengal and the drier parts of India.

Regarding new sources of India rubber, reference is made to a creeping Burmese plant, the *Chavannesia esculenta*, which was first noticed so long back as 1860, and again made the subject of a pamphlet published in India in 1874. The plant is there stated to be one "for whose extermination in the teak tracts an abundant provision is made." From Fiji samples of rubber were received at Kew, which were reported as "a strong, elastic, pure rubber, of the same character as the higher grades of African rubber." This rubber would seem to be the produce of a plant closely allied to *Tabernæmontana pacifica* or from *Alstonia plumosa*, both of which appear to yield caoutchouc in Fiji, and both of which belong to the same natural order Apocynaceæ. Regarding the rubber producing plants of the east and west coasts of Africa, which are referred to as species of *Landolphia*, also belonging to the same natural family as the preceding, the director reports that, "being climbing plants which ascend lofty trees, they coul not be grown like other rubber producing trees in independent plantations. But they would doubtless flourish in the jungles of any tropical country."—*Scientific American.*

Amalgams in Children's Teeth.—After I had found the statement to be true, "that every tooth plugged with a metal is a galvanic battery," it was easy to discover that children's teeth are more "positive" than the teeth of adults. Consequently they would be put in more peril from a gold filling than would better calcified teeth. In children's mouths the battery would be more likely to be set in operation, than in adult mouths, for the reason that children's mouths oftener contain acidulous fluids than others.

Theory and experiment in this direction harmonize perfectly. Acting on my convictions, I early began to use Fletcher's Amalgam in children's teeth. This week I have examined the mouths of several children for whom I filled teeth five years ago with Fletcher's "Gold and Platinum Alloy." One was a child eight years old at the time. Another was a ten year old child. In the mouth of the latter is a sixth year molar containing a large anterior proximal, a large crown, and a large buccal cavity, filled with that Amalgam five years ago, and now well preserved. A ten year old girl had four cavities in the upper incisors; one so large as to involve the palatine wall. These were filled with the same Amalgam, and are to-day in good condition. The surfaces of these fillings are blackened, but that is of little consequence compared to their preservation. I recommend these fillings to remain until pride of appearance requires their

removal. In the case of boys it might never be; in the case of young ladies it would be demanded at 17 or 18 years of age.

I feel quite sure that Amalgams are far superior to gold for the preservation of children's teeth. In filling the *crevices* of teeth with gold foil it is necessary to open them *much wider* than it is to use Amalgams. There are other reasons for their use which will suggest themselves to the mind of the reader.

According to my experiments, the strength of a tooth battery is as follows: Gold and Tooth, 6; Amalgam and Tooth, 4; Tin and Tooth, 3; Hill's Stopping and Tooth, 0.

We look for a better filling than we now have. Mr. Fletcher has done so much in this line that I look to him for something far better than has yet been discovered. I am pleased with the working of his "Porcelain Cement," but I cannot yet judge of its merits. We wish for something still more insoluble in organic acids.—*Dental Advertiser.*

New Experiments in Anæsthetics.—An experiment of considerable practical interest was performed a few days ago by MM. Labbé, Bert, Preterre, Lafont, and Regnaud, for the purpose of testing the practical applications of Professor Bert's researches on the anæsthetic properties of mixed nitrous oxide and oxygen *under tension.* You are doubtless aware of the character of M. Bert's researches, which were communicated to the Academy of Science in one of its recent sittings. But the experiment to which I allude was a practical one, applied to a human being. A chamber with compressed air having been prepared, the experimenters entered it with a young woman of twenty, who was to be operated upon for that most painful operation, ingrowing nail. As soon as the barometer marked an increase of pressure equal to 0.17 centimetres, M. Preterre, the well-known dentist, applied the apparatus which he is in the habit of using. There was a sudden cessation of breathing, which lasted about fifteen seconds. Then a long inspiration followed, and after ten seconds there was complete insensibility. Dr. Labbé now proceeded quietly and leisurely with the operation, followed by the dressing. All this took about eight minutes, during which time the patient slept quietly, with a regular pulse, and a clear, rosy complexion. On waking up she immediately felt the pain, and had a sort of short, hysterical fit, with crying. But she declared when it ended that she felt quite well and very hungry, as she had not had anything yet to eat. The assistants were struck with the way in which she recovered her normal condition, as she was able to walk immediately, and to resume her habits. The value of this anæsthetic mixture of about eighty-five parts of nitrous oxide and fifteen of oxygen, administered *under tension,* and discovered by Prof. Bert, therefore promises to be very

useful and practical. With this mixture, employed in compressed air, the patient does not get blue in the face, and the natural complexion, pulse, and breathing seem to be preserved. Moreover, it is not preceded by the period of agitation which often proves so tedious and troublesome, and is not followed by the stage of reaction which often upsets a patient for several consecutive hours.—*London Lancet.*

Utah Mineral Wax.—The great deposit of mineral wax, or native paraffine, lately discovered in Southern Utah, is described by Professor J. E. Clayton, of Salt Lake City, as occupying an area 60 miles long by 20 miles wide, and in some places forming a bed 20 feet thick. It contains more or less clay in seams and layers; but this is readily eliminated by melting, the earthly matter settling and leaving the paraffine nearly pure. It is quite black in the mass, but the sections are quite translucent. The quantity is said to be enormous; so great, indeed, that it cannot be controlled by any individual or company, but must prove a source of wealth to whole communities.

Professor Henry Wurtz pronounces the mineral to be zietriskisite, and says that it differs from paraffine by being insoluble in ether, and otherwise. Professor J. S. Newberry finds the specimens brought by him from Utah to be true ozocerite, and similar in all respects, except color, to that from Galicia; a true paraffine, melting at 60°, and being soluble in ether.

As to the origin and geological relations of this remarkable bed of paraffine—which so far as known, is without parallel in the world, and is as much of a "wonder" as our basins of petroleum, Professor Newberry cannot speak with any confidence until he has visited the locality where it occurs, as he hopes to do in a few weeks. He suspects, however, that it will be found to be an evolved product, the distillation of beds of cretaceous lignite, and the residue of a petroleum unusually rich in paraffine.—*Scientific American.*

An Anomalous Case of Replantation.—Dr. Harlan states the following case: A gentleman in the endeavor to open the apex of the root of an upper left lateral incisor tooth, with a fine needle, was so unfortunate as to break off the needle in his tooth, after it had passed through the foramen a distance exceeding an eighth of an inch. This accident happened on Sunday at four A. M., the 26th of May, 1878. He was sitting on my office steps when I arrived there on Monday at half-past eight A. M.

I worked an hour or more trying to dislodge the remnant of the needle, but my attempt to do so was futile. Not having

more time at my disposal, he was dismissed until half-past four P. M., having previously depleted the gum. I did not know at the time that the needle had passed through the end of the root, and as he had not preserved the other portion of the needle, I was unable to determine that point. The root, as I found afterwards, was a trifle more than three-fourths of an inch in length, and that portion of the needle which had not passed through the apex, was not longer than the thirty secondth part of an inch—rendering it impossible to dislodge it in the ordinary manner. At the appointed time the gentleman returned in great agony. After a few minutes I extracted the tooth and found what has been related above. Here was a case for replantation; as the gentleman had only seven front teeth, and two molars on opposite sides, he readily agreed to my proposal to replace the tooth, which was done in somewhat less than an hour from the time it was extracted. The hour being late, I filled the crown with gutta percha, and the root with gold. Previous to the replacement of the tooth I held it in tepid water for a few moments, and also caused a free flow of blood from the socket ligating it to the adjoining teeth; I bathed the gum daily two or three times with the tincture of arnica only. By the following Monday the tooth was firm in its socket. On the last day of July I filled the crown of the tooth with gold, restoring one-fourth of it—using the mallet to consolidate the filling. There was no pain or soreness. The tooth is still in good condition.—*Dental Register.*

New Thing for Cleansing Surgical Instruments.—A French journal describes a convenient preparation for this purpose, called *stilbeine.* It is simply a combination of rubber and impalpable emery powder. It comes in tablets of the shape and size of the ordinary rubber eraser. It removes rust and blood-stains, etc., immediately, and without scratching or soiling the instrument. All that is necessary is to rub the instrument with the composition, when it rapidly acquires a brilliant polish. It ought to be introduced into this country.—*Drug. Circular.*

The Use of Iodoform.—Finely powdered iodoform, or mixed one part to three with unguentum petrolei. makes an admirable applicction to the most sensitive surface, such as irritable ulcers, etc. It is a good rule never to apply soap to such surfaces; even the best obtainable is often irritating; and water should be thoroughly boiled and used when cooling. To do away the odor of the iodoform, so nauseous to many, it may be mixed with equal parts of tannin, or employed in ethereal solution.—*Med. and Surg. Reporter.*

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ARTICLE I.

Inflammation.

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Read before the New York Dental Association.

The gradual growth to higher and better interpretations of the phenomena of inflammation, as displayed in the works of John Hunter, Virchow, Remak, Billroth, C. O. Weber, Von Recklinghausen, Conheim and Stricker, not to mention many others, are proofs of the incompleteness of the satisfaction with which each has looked upon the labors of his predecessors and co-workers, as well as his own efforts.

Till this day it is impossible for the best observers to designate the point at which physiological activity becomes a pathological mode of its presentment. Whether some of the normal operations attendant upon the ripening of ova and spermatozoids are not properly classifiable as inflammatory activities is, at least, an entertainable proposition.

Histological research has shown the "corpus luteum" to be composed of scar tissue, of a like character with scars resulting from traumatic and inflammatory lesions. Excess

of blood plasm in any locality is liable to be converted into embryonal corpuscles or mucous globules, as the indifferent basis from which normal and abnormal products arise, according as the environment tends to lead to one or the other. Simple hyperplasia tends to increase of the normal tissues. When the blood tracts are obstructed, and the press of the currents great, stasis, exudation and retrogressive molecular changes take charge of the exuded blood plasm, and convert it into the products of the inflammatory process which this retrogressive metamorphosis constitutes.

Late histological discoveries strongly indicate that nerve currents and blood currents are necessary conditions to allow inflammation of any territory. All those territories, therefore, that are not supplied with blood circulation and nerve currents are, if unaided, incapable of repairing their wounds when traumatically induced. When the neural and vascular currents are coetaneous and unobstructed, it is doubtful if any mere acceleration could result in the inflammatory process; but when the heart's action is too great to exactly balance the tonicity of the capillaries supplied by the nerve currents, obstructions are readily induced in the tortuous channels of the capillary system. To prevent the inevitable advent of inflammation under such circumstances, the obstructions must be removed, and the simultaneousness of nerve currents and blood currents be regained. The simplest method of accomplishing this desirable end will be to call the part into vigorous exercise by the voluntary or involuntary effort of the subject, or by massage or the manipulation of another. The only reason why all inflammations might not thus be successfully treated depends upon our inability to cognize the departure from health at this early stage, and to get at the locality.

Swelling, redness, heat and pain have universally been grouped together as the definition of the inflammatory process. No one has put on record even an approach to legitimate, clear and satisfactory statement of the precise difference between normal nutrient function, and its derangement called inflammation.

Let us examine the process of conversion of pabulum (protoplasm) into the elements of tissue, and learn if we may that pleasure and pain, health and disease, are qualities or modes, and quantities or measure of functional activities that vanish into each other by disturbing and restoring the balances of regular molecular changes. To comprehend these, we must cognize the existence of atoms of which the molecules are composed; and to understand the manner of the coming together of the atoms to construct the molecule, we must take into consideration the static and dynamic aspects of the atoms, no less than the awakening and engagement of the definite measures of energy that effect the combinations. Why? And how? the molecules move are the two questions the replies to which shall reveal to us the complete explanation of all functional movements, and declare how they are produced and maintained or destroyed in functioning bodies.

Pain is the result of obstructed sensory nerve current; *swelling* supervenes upon obstructed vascular current; *heat* is resultant upon obstructions in the neural and vascular channels, by which the mechanical movements of the masses of nerve blood and vascular blood (through impact against the points of obstruction) become changed into molecular movement, which we cognize as *heat*. These three, viz: pain, swelling and heat are the only essential factors or necessary concomitants in the process of inflammation. The redness that has heretofore been made an equal factor is a mere incident, as is proved by some swellings being white.

What are we to understand by quality or mode, and quantity or measure of function? And how are we to differentiate these predominant aspects of the complex presence we denominate function of mind and function of body? The function of mind consists of seriated arrestations and releases of the tensions of consciousness, or the power of perception. The functions of body are also seriated successions of arrest and release of tensions of combinations

and separations of molecular and atomic bodies, through which the energy operates to produce molecular, granular, corpuscular, tissual, organic and systemic forms of function in their various manifestations.

Late works on chemistry assert that heat is given out or produced by combinations of atoms, and is taken up or quenched by separations of atoms. Works on physics tell us that "heat is a mode of motion," and that "mechanical motion, upon being arrested, is converted into molecular motion, which is heat." How then are we to account for the heat set free upon the admixture of sulphuric acid and water? How does the friction produce the heat so largely by the mere rushing of the molecules of water among the molecules of acid?

The partially engaged, unsatisfied or sleeping bonds of affinity belonging to the atoms in the molecules of water and acid, are in a state to be easily aroused into active motion by any impact of current within the sphere of influence, be it direct or oblique, simple or manifold, in its advent. We understand the diffusion of water molecules and acid molecules to result from the desire to attain equidistance from each other in the mass of fluid; and the rush to acquire that tension affects the awakening of the sleeping bonds of energy which, being set in motion, manifest the intense measure of heat always attending this experiment.

The difference between this process of disengagement of heat, and that form attendant upon the inflammatory process in animal bodies, consists in the greater complications of engagements and disengagements of bonds of affinity in the molecular mass in which these changes occur, and the greater freedom of the fluid in the vessel of the chemist, as compared to the confinement of molecular mass in the tissual interspaces of animal organisms. There is also a larger number of elements entering into the molecular mass, which is the basis of all animal forms of metamorphosis, than in the mass composing the vegetable or mineral ex-

amples of molecular aggregations. Hence, the increased opportunity for the display of greater varieties of molecular changes that split up and minify the thermal and other currents possible to this limited territory.

There is such a thing as having the receptacle of molecular mass so packed with molecules as to preclude any motion among them. This has been proven by a stoppage of fermentative action by the pressure of a given number of atmospheres. Take the example of a fermentable substance placed in an air-tight transparent vessel; exhaust the air by the air-pump, and then inject pure oxygen into the receptacle containing a quantity of yeast taken from the tub fresh and active. At first bubbles of carbon dioxyd (carbonic acid gas) will break and rapidly disperse into the vacuum above the yeast, there being no free oxygen present to support the fermentation, molecular change ceases to appear. Now, admit pure oxygen in a small quantity, and the fermentation is again set up with increasing activity in the ratio of the quantity of oxygen supplied, up to a given measure. So soon as the tension or pressure of the incoming current of oxygen shall interfere with the freedom of the oxygen molecules in the space above the yeast, the activity of the fermentative change gradually lessens by degrees, and finally ceases altogether. When the compression of the oxygen is great enough to arrest the motion of the oxygen molecules, they assume a static condition, preventing further changes between the oxygen and the hydro-carbons of the yeast. The yeast in the vessel is now in the condition of a "pop-bottle," or a bottle of "mineral water," fully charged with carbon dioxyd. All that is requisite to re-establish the fermentative activity is to take off the pressure from the gas above the yeast in the vessel, by giving it vent, so that the molecules of oxygen may be free to move among each other again, and then the attraction between the oxygen and the carbo-hydrates of the yeast mass is at once set vigorously at work generating molecules of alcohol and carbon dioxyd out of the already existing albumen, glucose, or diastase in it.

The alternate combination and separation of atoms to construct the varieties of molecules in the mineral, vegetable and animal primates of bodies is repeated and amplified, magnified and minified by the necessities of the types of the individual presence in the various crystals, cells and corpuscles that are the characteristics of the three kingdoms known to exist as planetary presentments. A serial order of appearance and disappearance, or coming from without and passing beyond our sensuous perception, pertains to the origination, growth and decline of every example of individual body or class of bodies, be they mineral, vegetable or animal. The chaotification of these gives the foundation from which all human functional capabilities originate; so, to understand all the activities possible to human bodies, we must become acquainted with the activities of the whole universe, of which man is the epitome.

"The whole is equal to all its parts" is an aphorism in the study of inflammation as true as it is in mathematics, astronomy and physics.

The combustion of hydrogen and carbon with oxygen is well known to produce *heat.* Friction also produces heat to the degree of ignition of combustible substances. Are we not then justified in assuming that the heat of fever and inflammation is also the product of combustion and friction? And does not this indicate that whatever prevents or arrests combustion will also arrest fever and the inflammation upon which it depends? The difference between fever and abscess is the difference between the combustion in a charcoal-pit and in an open fire. The first extracts the hydrogen from the combustible substance and leaves the particles of carbon in their undisturbed position in the charcoal or the coke; the second oxydizes carbon and hydrogen, converting them into carbon dioxyd and water, both of which conspire to change the mineral constituents, the wood or coal, into the salts of which their ashes are composed.

If we desire to understand just what fever and inflammation are, we must comprehend the process of combustion.

Combustion is the undoing of the work of the sun which constructs vegetable and animal tissues. How does this occur? Simply by the influx of an energy that enables the oxygen to disrupt the bonds of affinity of the atoms which "clamps" them together in the molecules: and the formation of other molecules by the use of these "clamps" in a different order of engagement of bonds. * * * Multivalent atoms are those which have many bonds engaged. These are placed in the "centre," or "skeleton," or "nucleus," of the molecule, around which the atoms, having few (2 or 3) bonds engaged, are distributed in a variety of ways This variation of the "skeleton" and "flesh" of the molecule is the measure of the differentiation among proximate principles. Slow oxydation of moist organic substances, especially those containing nitrogen, gradually consumes without sensible elevation of temperature. This has been called "eremacausis" (or burning by degrees.) Fermentation and putrefaction are both examples of oxydation also, but with sensible elevation of temperature. The first is distinguished by giving off no offensive gases, and by producing useful compounds; the second is characterized by the exhalation of offensive and deleterious gases. * * * By this play of affinities under the direction of the demands of the types of all forms of molecules composing human protoplasm, we have the elaboration of all the proximate principles belonging to the tissues of the human body, embryonal and adult, of a healthy or diseased character. Just how it is that the changes of position of molecules effect difference in the proximate principles of protagon, neurine, myeline, mucine, olein, margarin, cholestrine, cerebrin, lecithin, and a host of others (isolable, real and hypothetical bodies, nevertheless veritable radicals of the deciduous and permanent tissues of the body) is not just yet demonstrable without great labor with expensive apparatus.

But we do know—and can demonstrate—that tensile strength belongs to fluids as well as solids (if not to gases

also.) Bubbles on pure water prove the tensile strength of H_2O to be a fact, which is more easily displayed by adding soap or other viscous substance to the water, after which bubbles of larger size and greater strength may be formed, which retain their shape long enough to permit elaborate inspection. Another proof of the tensile force of water may be shown by pouring it from a perforated vessel on a smooth pool, when many spherules will be seen to roll over the face of the placid sheet for some time before melting into its body. It is said a stratum of air intervenes between the drops and the pool. But what enables each drop to retain its sphericity, if it be not the tensile strength of the water?

The rushing of the molecules of protoplasm, under the stress of the imflammatory process, has many degrees of rapidity; hence, the variety of the so-called products of this process. It may be affirmed that the first degree results in *Pus*—a simple, inoffensive body of dead blood, fluid and corpuscular. The second in *Sanies*—an offensive, decomposing mass of dead blood, evolving sulphuretted hydrogen. The third is *Ichor*—a yet further disintegration of blood, mixed with dissolved and rotten tissues, soft and hard. All that follows in this disgusting recapitulation (of demoniac possession) is the complete subversion of physiological dominion by chemical control of the elements of flesh and bone. * * *

How do we subdue fire? First, by cutting off the supply of oxygen to the fuel. Second, by quenching the flames. How is this last best accomplished? Not by water, unless it be sufficiently abundant to flood the whole body of the combustible on fire, but by enveloping the whole mass in a sheet of carbon dioxyd, or any fluid or vapor having no affinity for oxygen, or into which oxygen does not enter as a constituent. Where the fire is well kindled in an obscure building or part of a structure, it may be wise to isolate that locality, and allow the fire to burn out. Just so in local inflammations in territories that can be cut off, pre-

venting contamination of the whole system, it will be wise to ligate or compress the channels of neural and blood supply, until, by thus establishing physiological rest, the morbific form of metamorphosis is arrested. Afterward, normal nutrition may be depended upon to spontaneously take charge of the territory upon the re-entrance of nerve and blood supply.

Paronychia ("run-around,") which is an acute inflammation, has often been aborted by persistently plunging the finger into lye of wood ashes, at the boiling-point, dipping it in and out at intervals of a few seconds, until the nerve currents and blood currents were so controlled as to discontinue the pain and swelling. Whenever this method is vigorously and persistently pursued a rapid cure is attained. Even that terribly painful periosteal inflammation called felon may be aborted or cut short by tightly bandaging the finger or thumb. To be sure, some pain may follow this method, but it is better to pursue this course, even though no anæsthetic be used to bridge the period, rather than to let it run its own course to full suppuration. The safest anæsthetic to use in such cases is ice, or ice and salt, to produce numbness of the part until the retrogressive metamorphosis may be controlled. Evaporating lotions of various substances are worthy of trial; one of the best of which is common ether (falsely called sulphuric ether.) Rhigoline is also efficient. * * *

Depletion by diaphoresis, catharsis, or phlebotomy, coupled with nauseants pushed to the accomplishment of the purpose (viz.: arrest of inflammation,) are methods within the reach of all, and absolutely harmless in the hands of ordinarily intelligent patients and practitioners.

Bandaging answers a valuable purpose in our efforts to produce physiological rest of inflamed territories. Strips of sheet rubber judiciously applied, are excellent means to drive back the excess of blood in the extremities. In cases of bruises, or loss of tone of the capillaries from any privation of nerve currents, inducing suggillation, such as the

petechiæ (or flea-bite,) of low forms of fever, the application of a succession of layers of contractile collodion is an admirable means of removing the blood from these extravasated spots and from the congested capillaries. Eruptions of all sorts that appear as pimples, if left to themselves, may be successfully treated by the use of collodion applied in the manner indicated, and faithfully renewed whenever it cracks, until the danger to the face, neck and exposed portions of the skin is past.

With these principles and remedies and methods of applying them, coupled with a little common sense and entire control of the patient, no one is justified in allowing inflammations to run their natural course, as is the almost universal practice among general and special surgeons.

ARTICLE II.

The Effects of Arsenic upon the Pulp.

BY LOUIS OTTOFY, D. D. S., ST. LOUIS, MO.

The facts which will be brought to notice in the course of this paper, are not intended to bring forth new theories or ideas, but only to refresh your minds upon a subject so important. Arsenious acid (as O_3,) or the trioxide of arsenic is now almost universally employed in the dental profession, for the destruction of the dental pulp, and is justly claimed to be the best known remedy for that purpose. Before speaking proper of the action of this drug upon the pulp, a few general remarks of its action upon the system at large will not be amiss. Locally applied, it excites violent inflammation and congestion, destroying the vitality of the tissues, and, therefore, can be properly called an escharotic. Internally administered commencing with large doses and continued for a length of time, dryness of the mucous tracts follow, metallic taste, increased flow of saliva, nausea, increased secretion from the liver, bowels and kidneys follow, vomiting of glairy mucous, epigastric pain, irritation of the conjunction iva and soreness

of the epigastrium, cutaneous eruptions, loss of the hair and nails, palpitation, oppressed breathing, paralysis, convulsions, conia and delirium, terminating in death. These are briefly stated the successive effects of arsenic upon the system.

The post-mortem indications are deep redness, congestion more properly venous than arterial, erosions, ulceration, softening, effusions of lymph and gangrene of the gastro-intestinal tract. The blood most usually fluid and dark colored, redness of the tracheal, bronchial and pulmonary mucous membrane with venous conjestion of the lungs.

How arsenic does act is a question which has baffled great many investigators. Some claim the poisonous effect to be due to irritation, others to its action upon the nervous and cerebro-spinal system, while some attribute the effect to the severe congestion and strangulation which it causes. That it is not absorbed into the blood has been sufficiently demonstrated; it can.be applied to one pulp, and after having destroyed the vitality of that tissue, it can be again applied to other tissues with the same effect, disproving the theory of absorption.

There are two oxides of arsenic, the trioxide (as O_3), the one we are in the habit of using, it being superior in action to the other, the entoxide (as O_5); both these compounds are available as oxygen carriers; the arsenious acid has no immediate affinity for albumen, but is transformed into a poisonous compound in the system. One peculiarity of arsenic is that the oxides, when in contact with organic substances, are very apt to undergo oxidation and change from one compound into the other and vice versa. If arsenic acid or its weak alkaline salt is digested with fresh albumen, fibrin, pancreas, etc., and even with vegetable protoplasm, dyalisis always yields arsenious acid and no decomposition occurs. Decomposing fibrin gives the same reaction. On the other hand if arsenious acid free or as its salt is digested with pan creas or with the fresh leaves of

cabbage, dyalisis yields definite evidence of arsenic acid. Defibrinated arterial blood as well as pure oxyhaemaglobin also undergo this change. It is noticeable in the arsenic eaters, that their respiration is increased in ratio with the amount consumed, therefore, proving that there is an increased oxidation going on, and subsequently an increased amount of carbonic acid eliminated; arsenic, therefore, can not be considered as either promoting constructive or destructive metamorphosis. This all shows that while the arsenic is present in the system, an increased amount of oxidation goes on; which is also the case with arsenious acid itself. When applied to the pulp; it extracts from the blood and tissues oxygen in order to form arsenic acid, and as soon as this is accomplished the tissue is destroyed, in the case of the pulp; at the same time from its tendency to cause inflammation and conjestion an increased amount of blood flows to the pulp, thereby enlarging the caliber of the arterial twigs; the pressure caused by these vessels upon the returning veins causes a stasis of venous blood and strangulation.

Arsenic acid, as mentioned before, if applied to healthy fresh albumen or fibrin yields arsenious acid; the latter on the contrary applied to defibrinated arterial blood as well as pure oxyhaemaglobin, changes to arsenic acid. This, therefore, gentlemen, in conjunction with the strangulating effect of the dilated arteries, tends to prove that death of the pulp takes place from the combined action of strangulation and oxidation.

ARTICLE III.

[*Continued from August Number.*]

American Nervousness: Its Philosophy and Treatment.

BY GEORGE M. BEARD, M. D., NEW YORK.

An Address delivered before the Baltimore Medical and Surgical Society, February 12th, 1879.

What, now, are the causes of this increase of nervousness in America during the past half century? There is

no single cause; it is a combination of influences that have brought about this unparallelled condition of the nervous styst m. The primary cause is unquestionably civilization, especially with its recent accompaniments, as the telegraph, railway and the periodical press. These three institutions have drawn, and continue to draw each year, most severely on the nerves of nearly all classes; but particularly upon those who are favored with education. The introduction and popularization of the railway and the telegraph, and the development of the periodical press, belong, it will be observed, to the nineteenth century; and they have intensified in ten thousand ways cerebral activity and worry. This factor of civilization applies to all the great countries —Europe as well as America.

But after we have given this cause every credit to which it is entitled, we are yet face to face with this question. Why are the Americans more nervous than any other people on this planet? The answer to this question, which has occupied the thoughts of philosophical observers for the past quarter of a century, is to be found mainly in these factors: First, the dryness of our atmosphere; and secondly, the extremes of heat and cold. In these two respects, America differs from any other civilized country.

Dryness of atmosphere produces nervousness in two ways: first, by taking up and absorbing the moisture of the body, thus causing us to literally dry up. When the atmosphere is moist, perspiration accumulates upon the surface of the body, because the air cannot take it up. Hence, in our dull dog-days, we are frequently annoyed by excessive perspiration. In a dry air which is hungry for moisture, the fluids of the body, as they become vaporized, are rapidly conducted away; the body is thus wasted of its fluids. Dry air also prevents the electricity of the body from being conducted away, and thus we become excessively charged with that force, and excessively stimulated by its confinement in the body. Moisture conducts electricity; and the moistened air intensibly carries away

the electricity of the body, so that it is impossible for the body to become so excessively charged and stimulated. The evidences of this dryness of our atmosphere are numerous and striking. Clothes on the line dry more rapidly than in Europe. The specimens of the naturalists do not so quickly mould; the hair is stiffer and dryer than that of our European contemporaries, and requires more pomade and oil. This peculiarity of our climate is observed from the Atlantic to California; and the Rocky Mountain region is far more under the influence of this dryness of atmosphere than even the East. In the region of northern Dakotah and Montana, as all authorities agree, buffalo and meats of other kind dry more speedily when exposed to the air, and keep much longer than in other countries. The electrical state of what I have spoken, and the charged condition of the body, is also very commonly observed in that section of the country. A comb drawn through the hair produces crackling, and sparks come from the clothing while dressing and undressing in a dark room; and in some cases on the mountain sides, actual lightning is seen coming out of the rocks or soil. In this section of the country, also, where the air is so extremely dry, nervous people frequently become more nervous; they are troubled with insomnia and neuralgia, and various forms of debility. In the valley of Sacramento, as is well known, the north wind coming down from the mountains is exceedingly dry, somewhat like the simooms of the East; so that the whole earth—the metals upon it—become surcharged by the electricity which cannot escape; and the fruit on the side from which the wind is blown, becomes parched and shriveled, and the grass everywhere has its vitality impaired, while men and animals of all kinds become fretful and irritable. This extreme condition illustrates the process which is going on, though in a less degree, all over the northern and eastern portion of the United States. The violent extremes of heat and cold—the bitterness of our winters contrasted with the heat of our summers—excite nervousness by over

stimulation. The application of latent heat and cold, as ice in hot water, is one of the most powerful means of local stimulation that we have in medicine; to this treatment, nearly all of the American people in the northern and eastern sections are constantly subjected.

Secondly, extreme heat and cold produce nervousness by compelling us to live in-doors in unnaturally dry and over-heated atmospheres, and making it impossible, either in summer or winter, to partake of those active out-door exercises and amusements in which our English friends indulge at nearly all seasons of the year. The English climate, as contrasted with the American, is more equable. Its moisture, and even its unpleasantness and disadvantageousness is favorable to the nervous system; likewise, the climate of our Southern States is more moist and more uniform than of the North and West: and, according to investigations that are variously made, nervous diseases of all kinds, or nearly all kinds, pretty steadily diminish in frequency as we go South.

The institutions of civilization common to all enlightened countries, such as schools, newspapers, excitement of elections, reforms and revivals, are themselves the results of climate and race, and are also to be included among causes of nervousness. Civilization is burdened with information that it must acquire; every year history raises up new facts, that the school-boy of the future must commit and recite. If we would know why the Americans are so nervous, we should contrast the Greek boy with the New York boy in their manner of training in the schools, in their play, and in the whole order of their lives. The Greek boy's life was a poem, a constant holiday, a perpetual picnic. Of study, toil or work, to which the New York boy is early trained, he knew nothing. Work is really a modern institution. All culture, history, science, literature and languages that have appeared in the world during the past two thousand years, the lad of to-day must try and acquaint himself with. Of all these, the Athenians knew nothing—

could not even predict. When we contrast the life of an American child, from its early school days until the hour it leaves the university or seminary, the many and tiresome hours of study, the endless committing and repeating and forgetting, the confinement in constrained positions, the over-heated and over-dried atmosphere, the newspapers and novels that he is and must be prepared to converse about and criticise: the sermons and lectures which he is compelled to listen to and analyse, the strife and struggle for bread and competence against inordinate competition, the worry and concentration of work made both possible and necessary by the railway, mail service and the telegraph; in view of these facts, we wonder not that the Americans are so nervous, but rather wonder at the power of adaptation of the human frame for unfavorable environment. The education of the Athenian boy consisted in play and games and songs, and repetitions of poems, and physical feats in the open air. His life was a long vacation, in which, as a rule, he rarely toiled as hard as the American lad in the intervals of his studies.

The rapidity of our modern and American life has a tendency to concentrate an enormous amount of activity in a brief space of time. The intensity, the fierceness and violence of our toil, are the results of our climate; and in their turn, they deepen and intensify our nervous sensibility. In the study of this subject, the disposition has been to look exclusively at some one of these secondary elements—our haste in motion or our haste in eating, and to consider some one such factor as the sole cause of American nervousness. Indeed, I may say, that up to the present time, this has been the popular mode of interpreting the unparallelled phenomena connected with American nervousness. Effects have, indeed, been confounded with causes—a process of reasoning which, it may be added, vitiates and destroys nearly all human philosophy, and nearly on all themes, but especially, on questions of sociology, such as the effects of stimulants and narcotics, or diet, or social customs. Amer-

ican nervousness is a complex resultant of a number of factors—not a single result of one. In order to understand it, to grasp it, to master its philosophy, we must be able to see these factors all at once by themselves, and in their relations to each other.

There is one disease, the type and centre of a large family of functional diseases, to which I have applied the term *neurasthenia.* If we understand the philosophy of this disease and its treatment, there will be little difficulty in understanding the philosophy and treatment of very many of the family of functional nervous diseases to which it belongs. Neurasthenia is pre-eminently an American disease. It might, indeed, be properly called *Neurasthenia Americanna.* Although it is found in England and on the Continent, it was here first systematically described, and here it exists in greater variety and frequency than in all other countries combined. The generic term neurasthenia—nervous exhaustion—I subdivide into two: cerebrasthenia—exhaustion of the brain; myelasthenia—exhaustion of the spinal cord.

Among the symptoms that I have referred to *cerebrasthenia* (brain exhaustion) are tenderness of the scalp, cerebral irritation, tenderness and whiteness of the teeth and gums, flushing of the face, special idiosyncrasics in regard to food and external irritants, morbid desire for stimulants and narcotics, insomnia in its varied manifestations, dilated pupils, melancholia or mental depression, deficient memory, or power of intellectual control, different forms of morbid fear, as astruphobia (fear of lightning,) agoraphobia (fear of places,) anthropophobia (fear of man and society,) and its opposite, monophobia (fear of solitude,) sick headache, and various forms of headache, and pains in the head, disturbances of the nerves of special sense, as *tinnitus aurium*, and specks before the eyes, subjective tastes and odors, dryness of the skin, eyes, throat and mucous membranes generally. Among the leading symptoms of myelasthenia (exhaustion of the spinal cord,) are spinal irritation with

general hyperæsthesia, irritation of the tip of the spine, coccogynia, irritable breast, irritable ovaries, irritable womb, vague pains throughout the body, flying neuralgias, tremulous and variable pulse, sometimes very high and sometimes very low, with occasional attacks of palpitations, sudden giving away of special or general functions, shooting pains in the limbs similar to those of ataxy, sudden starting on dropping to sleep, abnormalities of the secretions and dryness of the skin, or the opposite, excessive perspiration, local and general, as sweating of the hands and feet, gaping, yawning, stretching, neurasthenic forms of chilliness, creeping sensations in the spine, ticklishness, local spasms of muscles—the so-called fibrillary contractions.

This differentiation of the symptoms of cerebrasthenia and myelasthenia is not absolute; a number of these symptoms would seem to be common to both forms, and some, very likely, are due to disorders of the sympathetic in the cerebral or spinal region, or both. In some patients we have almost pure myelasthenia; in others, almost pure cerebrasthenia; in others, a combination, or, as is very frequently the case, an alternation of the two. Some of these symptoms, when they occur, themselves act as causes for other symptoms; for the sensitive nervous human body is like certain mountainous regions—full of echoes and reverberations. An irritation at one point may be transferred to any other point, following along the paths of least resistance, and making itself felt in those parts that are least able to resist molecular disturbanees. Thus, for example, seminal emissions and spermatorrhœa, when they arise through abuse or through spinal cord disease, almost uniformly react on the brain—robbing the sufferer of courage and manliness, exciting various phases of morbid fear, of which I have spoken, with aversion of the eyes and countenance. The reaction is also on the vocal apparatus, causing a neurasthenic voice; on the eyes bringing on neurasthenic asthenopia, against which glasses and gymnastics are powerless; on the stomach, inducing irritative

dyspepsia ; on the sweet-centres, prodncing morbid sweating of the hands—palmar hyperdrosis ; on the face and hands, and ears especially, producing morbid flushing and redness. Likewise, also, nervous dyspepsia, whether excited directly by abuse of the stomach or by over-use of the brain, reacts on the brain itself and on the whole organism ; so that, an attack of indigestion is sometimes indicated by pains in the limbs, or by nervousness of a vague and indistinct character in different parts of the body.

It is of supreme scientific and practical importance to be able to make a differential diagnosis between the symptoms of neurasthenia in its different forms and the symptoms of early stages of grave structural lesions of the brain, spinal cord, peripheral nerves. To make such a differential diagnosis is sometimes the severest test to which the neurologist can be brought, and one of the highest value for the happiness, the plans, and the whole future of his patient. The not being able to meet this test has been, and is now, in all countries as well as our own—particularly in the last twenty-five years—a cause of frequent errors in the advice—both hygienic and medical—given to patients; for the prognosis and treatment of neurasthenia is oftentimes quite the opposite of the prognosis and treatment of incurable cerebral, spinal or peripheral nerve lesions. If we were compelled to be guided by isolated symptoms, it would be impossible, in many instances, for human skill to make such differential diagnosis between neurasthenia and some of the diseases that it stimulates ; for the symptoms, considered by themselves, are sometimes precisely the same; and of themselves alone would not point towards the solution of the problem. The tendency of neuropathology is not toward, but away from, the idea of single pathognomonic symptoms. It is by considering groups of symptoms in their relation to each other, and to the history of the case, that we make out, in recent times, the diagnosis of ataxia, or of any of the different forms of spinal disease, or of hay fever. Whenever any of the different phases of

professional cromps develop, such as of musicians, or writers, or painters, or telegraphers, or designers, or engravers, or artists, or barbers, or counters of money, there are single symptoms in any one of these diseases, that in themselves, might mean rheumatism or neuralgia, or neuritis, or diseases of the joints or spine; and very often, indeed, this mistake in diagnosis is made in spite of all the literature and teachings upon this subject.

Neurasthenia is differentiated from organic disease, by taking into consideration these four elements: (1) The fluctuations and inconsistency of the symptoms; (2) heightened reflex action; (3) the existence of some certain special symptoms, which will rarely be found in organic spinal disease—such, for example, as different forms of morbid fears which I have described, palmar hyperidrosis, excessive tenderness of the spinal cord, deficient thirst, abnormally active pupils, mental depression, extreme insomnia, morbid desire for stimulants and narcotics. In certain organic diseases, it is true, there may be heightened reflex action; but, as a rule, reflex action is diminished in organic or structural disease of the spinal cord. Closely analyzed, a large proportion of the symptoms of neurasthenia, as I have before described them, are of a reflex character coming from the stomach, or some part of the genital apparatus, or, if they are not reflex in their origin, are at least made worse by a reflex irritation. To know this fact, and to act upon it in the treatment of these cases, is indispensable for success. One may treat sweating hands and flushing face and various neuralgias and headache indifferently without any permanent effect, until we attack and destroy the cause, which is often found in some portion of the genital apparatus. (4) Those in whom the nervous diathesia predominates, are likely to have functional nervous diseases.

In regard to the prognosis in cases of this kind, this general statement is sustained by experience, viz.: All of these cases can be relieved; many of them can be absolutely or approximately cured; but in all cases time and patience

are necessary to bring about these results. I have watched these cases for years after they have left off treatment, and I keep up correspondence with patients who have been under my care, and thus have an opportunity to know what the issue is. Patients of the kind live to a good old age—may attain even unusual longevity, and may have their best health during the latter part of their lives.

Our "sick headaches" almost always leave us between 50 and 60, but of course, sometimes earlier—about 40 or before; and in this respect, sick headache is, I am persuaded, a type of a large number of functional nervous disturbances.

The results of treatment depend greatly on hygiene and therapeutics. These cases respond to treatment: they yield directly and positively to the influences of remedies. It has been the usual plan to manage cases of this sort, without making any special diagnosis, by what is called moral treatment, which, when scientifically employed, is mental therapeutics. This is a just and most potent means for controlling the disease, but is not to be used exclusively in these diseases any more than in any other disease; subjective treatment is merely an additional means of relief. In regard to the details of treatment, I will state but a few facts.

First comes *electricity* in its various modes of application—central, general and local. In the dosage, we are, in recent years, learning these four facts: 1. That it is sometimes best to use it in exceedingly small doses, mild currents and short applications. 2. That it is sometimes well to use a very strong and painful current. 3. That applications may be protracted for hours in succession. 4. That applications may be made much more frequently than is the general custom. These four propositions are not brought out in our text-books. I have not myself insisted upon them, as I mean to do hereafter when I refer to this subject. They have been impressed upon my mind especially of late, and are the direct results of experience with cases. These four propositions apply to nearly all our remedies. In

truth, we are widening and deepening the system and range of our therapeutics forces by modification of the quantity and quality and mode of administration. I have long taught that for spasmodic difficulties, like local sprains, of muscles, convulsive tic, facial spasms, etc., very mild galvanic currents are preferable; but I have lately seen a case where very powerful and painful faradic currents, applied with the electric brush, or with the sponge, or both, and with as strong currents as could be borne, were more efficacious than the mild currents. Likewise in sciatica, and even other forms of neuralgia, painful currents that make a blister, or at least very irritating to the skin, may succeed after mild applications have failed. An electro-puncture directly into the nerve itself will cure when the mild currents are powerless. In the treatment of a new case, and until we have learned the temperament of the patient, and the way he responds to electricity, it is proper always to employ mild currents, and for the same reason that it is always best to begin with a minimum dose of any remedy. But, when necessary, it is also well to test the full physiological effects of the remedy before giving up a case. I am convinced that in many cases electricity will not give extraordinary effects until we have produced the physiological effects upon the patient, such as soreness of the muscles, nervous irritation, sleeplessness, temporary accerbation of symptoms and the like. To begin treatment with the excitation of these symptoms, is unwise as a rule; very many persons are over-galvanized and over-faradized. Every case in this respect must be itself a study. I formerly believed that an application once a day was, to say the least, enough; but I know from experience that applications twice a day, and, in some cases, applications quite prolonged are advantageous.

Many years ago I pointed out the fact that there are certain temperaments that do not bear electricity, or bear it very badly, and must be treated with mild currents, and with quite long intervals between the applications. Any

new cases that come under our care may, for all we know, have this temperament. These propositions apply to all the other remedies of which I am to speak.

The ancients, you know, classed the divinities as major, minor—*Dii majores, Dii minores.* Similarly, neurotics may be divided into major and minor remedies. At the head of the major remedies—the *Jupiter omnipotence*—stands without question, electricity; then come ergot, the bromides, arsenic, strychnine, oils and fats, counter irritation, cannebis indica, massage or systematized manipulations of the muscles, the use of dry heat and cold, hydro-therapeutics, the zinc preparations, belladonna, digitalis and iron.

Of these various remedies, *ergot* is especially worthy of note. Just how ergot acts in nervous diseases is not known, nor indeed are we likely to know in satisfactory detail the action of any remedy. That ergot contracts the blood-vessels, and thus is useful in local congestion of the brain and spinal cord, is one of the clearly established facts in physiology, and is one of the few definite, solid foundations for therapeutics; but that this effect on the blood-vessels is all that there is in ergot in its action on the body, no philosophical student of nervous diseases would claim. Indeed, this contraction of the blood-vessels must be a result as well as a cause. Behind and beyond all this there is an influence which we cannot analyze. One advantage of ergot is the immediateness of its effects, particularly in spinal hyperæmia. The particular doses of ergot need important modifications in special cases. In some instances, very large quantities of ergotine may be given with benefit and without any harm that I can trace. I give ergot for immediate effects, for sick headaches, and for headaches of other kinds, and for long continued action in spermatorrhœa and various other conditions.

Another of these *Dii majores* of neuro-therapeutics is *arsenic* in its different forms. I use, not only Fowler's solution, but DeVeriangans, with also the English preparation of the chloro-phosphide. Arsenic is a remedy, the

effects of which are not, as a rule, felt at once. It needs to be kept up—to be persevered with for many weeks, oftentimes for many months. In some cases, no good comes until the physiological effects have been produced. The great power of arsenic for immediate as well as present effects, has been reecntly impressed upon me by a very remarkable case. A well known physician of New York was under my care for severe neurosis of the stomach, attended with vomiting of all of his food. Though he ate great quantities, he was growing thin and feeble, and he rebelled against nearly every treatment that had been suggested, or, at least, everything that I gave soon lost its effect. I urged him to use arsenic in small doses; at first he was somewhat averse to trying it, and had made up his mind to go to Europe. For a number of months I did not see him, and supposed he had gone to Europe. A short time since he came to my office and reported that he had tried the arsenic as I had recommended, and that the effect had been immediate, and, with but a slight relapse, up to that time permanent. He had gained in flesh, and regained his power to digest food. The remedy, indeed, acted with specific effect upon him.

Another remedy that perhaps will become, if it is not already, one of the major divinities of neurology is *cannabis indica.* This remedy has a reputation of untrustworthiness and unreliability, both of preparation and of action. This reputation it is very fortunately loosing. I find that for some conditions cannabis indica is one of the most trustworthy, most reliable and valuable of remedies. It is one of the drugs, by the proper use of which, the sick headache, for example, has been, within a few years, revolutionized, both for temporary relief at the beginning of an attack and during the attack, and as a permanent cure, provided, its action is maintained for weeks and months. It is one of the most certain and convenient and agreeable of all the preparations used in neuro-therapeutics. Its quick and permanent influence over the symptoms of headache sug-

gests its great value in other conditions allied to sick headache, or from which sick headache springs; and I am accustomed now to use it in the different phases or manifestations of neurasthenia and kindred affection. I use it sometimes alone; sometimes in combination with various tonics and sedatives.

Another remedy, not very widely known, but one the value of which is easily proved, is *cirate caffeine.* Some years since, I called the attention of the profession to the value of this remedy in sick headache as a means of temporary relief at the beginning of an attack; very many physici ns have obtained the same results. I now use this remedy for other symptoms beside sick headache, such as backache—what may be called headache in the back—and malaise, general depression. A disadvantage of this remedy is, that it produces wakefulness, and therefore cannot be taken in the latter part of the day.

Allied to caffeine is *coca*, belonging, indeed, to the same family; indeed, it is the active principle of common coffee, tea, guarana and chocolate. The value of coca as a means of preserving the strength, and abstaining from ordinary food, is erroneously exaggerated in the stock anecdotes that are flitting about our medical literature on this subject; but it has, without doubt, a special and most interesting sustaining and tonic power. It relieves the pain and uneasiness that follow over-exertion, and the peculiar distress that comes from sleepless nights, for which purpose, I may say, caffeine may also be used.

The *zinc* preparations, particularly the bromide, valerianate and oxide are sedatives of very great value in various neurasthenias, and I use them with great freedom. I gave once the zinc combination, including the bromide, the valerianate, the phosphide and the oxide, to a physician who consulted me about a year ago for neurasthenia, resulting from over work in his profession. In a few weeks he reported himself to me to express his gratitude and to testify to the great value of the remedy as a hypnotic as well as a sedative.

Duboisia, the new remedy from Australia, is likely to take a minor if not a major place among the resources of the neurologist. Its effect is somewhat like that of atropine, but yet not entirely like it; and, for the symptom of hyperdrosis, seems to be more effective according to experiments that I have made with it.

Cimicifugin is a remedy, the value of which in choreic conditions is undeniable, and I am persuaded that its use need not be restricted to those conditions.

There are three other remedies which I use considerably, particularly in renal and bladder complications, and genito-urinal disturbances, viz., the *trailing arbutus*, *eucalyptus*, and *hydrastis*. I believe that these remedies, which I often give in combination, have a tonic power, and are of service even when there is no genito-urinal complication. *Damiana* is a remedy which appears to have a general tonic power in a certain special action upon the lower part of the spinal cord, although I have not yet succeeded in obtaining from it the speedy and immediate effect that has been claimed for it. I use it in combination with other remedies.

Thus far I have spoken mostly of new and unfamiliar remedies; the old medicines, however, must not be forgotten. Much that was valuable in our medication, is as good now as it ever was. When our fathers were consulted for cases of this kind, they treated them, if they treated them at all, with something to act upon the bowels, as cathartics or something of that kind. In this way, they did give some transient relief. I frequently act on this principle, and occasionally administer cathartics to act upon the liver and the bowels. Counter-irritation is certainly a good thing, and cathartics produce counter irritation of the bowels like a blister on the spine.

Strychnia is one of our older remedies, and I use it sometimes alone, but very frequently in combination with other remedies; yet it cannot be used in all cases, for sometimes it has a depressing effect.

Opium, in small doses, is excellent for many phases of

neurasthenia; and were it not for the danger of forming the opium habit, I should use it more frequently than I do.

Alcohol also, in the form of wine, particulary claret and Burgundy, is to be advised in some cases of this kind, but not recklessly, or without reference to the age, character and temperament of the patient. Alcohol is one of the best of our hypnotics in cases where the bromides fail to produce sleep. Where chloral causes severe headache next morning, claret wine, freely used, may produce satisfactory effects without any unpleasant after effects. I do not mention this as a general prescription; I simply say there are cases of which the physician must judge. It has the same objection, however, as opium—that its use may lead to inebriety. In the treatment of nervous cases, it is sometimes necessary to use all of these potent remedies in incredibly and absurdly small doses.

The *mineral acids* are likewise old remedies, but they are good remedies. Dilute nitro-muriatic acid, either alone or combined with the vegetable bitters, I use in different forms of nervous exhaustion, especially where the urine is over loaded, as it often is, with oxalates and urates.

Of *cod-liver oil*, I may say that it probably does more for the nervous than it does for the consumptive. Oil and fats, like cream and butter, are brain food, and if used judiciously, as the stomach can bear them, act both as food and as medicine. The oil I use generally in the form of emulsion, and I use it with great freedom.

Of *phosphates*, this can be said: that they belong to the list of over-praised and over-used remedies. There is a fashion for phosphates just now, and when men become neurasthenic, they think they are on the road to health if they take some of the phosphates or phosphites. Now, these phosphates and phosphoruses and phosphites, are good remedies in nervous troubles; but if they had anything like the specific power claimed for them, there would be little need for treating these cases; most of the patients that I see have taken them in abundance. All these stock remedies have a

certain power which, in very many cases, they soon expend —they reach the limit of effect, beyond which they cannot be forced.

Another new remedy, or comparatively new to this country, is *koumiss*—fermented milk. The power of this remedy to produce sleep is very great, and very satisfactory. It is a means of nourishing the body without disturbing or even using the stomach to any very great degree. Koumiss is really digested milk, and is absorbed and taken up into the system without any strain upon the digestive apparatus. My friend, Dr. Brush, who has given attention to the study of this subject, tells me that from experiments which he made sometime since, it was pretty clearly proved that the alcohol which the koumiss contains was used up in the system and not eliminated. I am persuaded that the use of koumiss in the future is to be very widely extended for all conditions where nutrition is difficult—not only in adults, but in children. The one disadvantage of koumiss in some cases—that it constipates the bowels—is to be met by laxatives.

Another very old remedy, but as good as it is old, where it is properly used, is counter-irritation, which I employ both in the form of *actual cautery*, and galvanic cautery, and very small blisters, so small and so arranged as to cause very little annoyance. Counter-irritation in the hands of those who really understand how to use it without abusing it, is one of the three or four major remedies of neuro-therapeutics.

There is among the people, and even in the profession, a prevalent notion that the application of the actual cautery is a very painful procedure. This false idea has been fostered with the public on account of the supposed sufferings of certain prominent persons, like Charles Sumner, and Clara Morris, the actress, from this treatment. The lectures of Brown-Sequard, referring to this subject, assisted in confirming this impression, and the newspaper accounts, in every possible way, have stimulated and strengthened the

belief that it requires the courage of a hero, to submit without etherization, to the operations of the actual cautery. The idea of fire is always troublesome to the human mind; the idea of hell is associated with infinite burning. All these factors together have made it difficult for physicians, in modern times especially, to resort to the use of the cautery as often as it might be well to do. The real scientific truth on this matter is, that the actual cautery, as it can be used, and is used by those who understand it, is not specially painful, even to the most delicate women. The pain is in the idea of the thing—in the expectation, and not in the burning. Any one who has had a sensitive tooth filled, has suffered ten times more than one who has submitted to a cautery operation, if properly performed. I speak of this point particularly, because the cautery is an agent of such great therapeutical power. This mode of treatment, like the blisters already referred to, must be, and now can be, modified and adapted to the sensitive modern constitution. It is one of the great remedies that stands the test of time and large experience.

Hydro-therapeutics in the form of bags of hot and cold water, the Russian and Turkish baths, and alternate applications of hot and cold is, in skillful and judicious hands, a great remedy for functional nervous diseases. The difficulty is that men prescribe these things for themselves, and use them for themselves and by themselves, and often get evil when they might get good. Every remedy that is good for anything, may, when improperly applied, do harm; but harm in these cases is not due to the remedy, but to the one who uses it.

It is impossible to speak of the treatment of this class of troubles without referring to the *bromides* of potassium, and sodium and lime and lithium. Bromides may not be classed among the old remedies. Their great value in epilepsy has long been known. They are not, however, so well understood in other nervous diseases of a functional character. The bromides may be used in large doses, frequently re-

peated until the powerful sedative effect is produced, even when there is no sleeplessness; those who use the bromides in this way must know where to stop or to reduce the dose.

There are a few general principles of treatment of which I will speak. First of all, the proper use of *rest* and *work* in the treatment of nervous disease. About a month ago, a patient with ataxy came to me from a distant city in the West; I said to him, "you have left behind you a better doctor than you can find here." He asked, "Who?" I said "*rest!*" I prescribed it for him, and put him to bed. He had been accustomed to take excessive exercise—at least, far more than was good. The next day, another gentleman came, also from a distant city of the West, with the history of a certain form of cerebrasthenia—brain exhaustion—without any myelasthenia, or spinal exhaustion—and of a type that would be benefited rather than injured by a degree of mental and physical activity. He had felt disheartened and thought there was little for him to do in this world. He was of about middle life, and I told him that he probably was no more than "half-way home," and so far as the disease was concerned, he might live and be active for thirty or forty years longer. When he returned, I said to him, "you have come a long distance to consult me, but you left at home a better physician than you can get here." He asked, "Who?" I said "*work;* work I prescribe for you. Take that in connection with all your medicine and you will recover." These two cases make clear the opposite methods of treatment.

A second and general suggestion is, that of a stopping treatment or suspending it at times. Suspending treatment has a positive effect upon the system. Oftentimes it makes a direct impression, which may be better than continuous treatment. A friend of mine, formerly a sea captain, states that when sleeping in his cabin at night, if the sentinel walking the deck above him stopped, it would always wake him. The sudden sensation of nervous activity, like a jar

upon the nerves, aroused him from his slumber. I find that patients sometimes do better—make more decided progress—in these intervals of treatment than while the most active measures are being used. Patients sometimes imagine this a proof of the valuelessness of the medicines; but it is in reality a proof of their power. It has been said that success in life depends largely upon knowing just where to stop. In the practice of medicine, this maxim is certainly sound; and to know where to stop, to let up, to modify the treatment, is one of the best tests of medical skill.

The third general suggestion is, that in the treatment of nervous diseases, we should study with all our energy the psychology of our patients; we must make a diagnosis of the intellectual character as well as of the disease before we can make a prognosis or adopt a plan of treatment. There are those whose minds are so organized, which lack some qualities and have excesses of others—usually a preponderance of the emotional, with a deficiency of the higher intellectual qualities—that they act badly under any treatment, however wise. Some patients take a pleasure in their distresses; it would be cruel to cure them; their pains are their possessions. Any man wishing to make them well would be no better than a thief or a robber. There are those whose chief felicity in life consists in doctoring and being doctored, and to whom the removal of their bodily ills would be like the death of long cherished friends. When such persons come under your care, you cannot expect any treatment to be as successful as with those strong and active intellects, who understate rather than magnify their troubles, and are resolutely determined to get well.—*Virginia Medical Monthly.*

ARTICLE IV.

Family Taints.

BY SAMUEL PETERS, M. D., OF COHOES, NEW YORK.

The fact has often enough come to the observation of physicians, that some families of children have a low or weak vitality. Such families frequently, and I think as a rule, contain several members, even more than the average, so that we might term them large families; but they die, some with one disease some with another. Prominent among such fatal diseases we may name tubercular meningitis, scarlet fever, diphtheria, cholera infantum, etc., although almost any disease is likely to overpower the tender body and prove fatal. Thus we often see several little graves in a row, one after another having fallen a prey to some affection that others would have readily overcome.

What the peculiar constitutional character of such a family is, may in some cases be difficult to understand. We find, as a rule, the children are fair, intellectual, promising, even sometimes stout and rosy-cheeked, light skin and hair, yet possessing a certain *taint* which readily proves itself in unmistakable evidences of low grade of vitality, and for which, I believe, we have no name that will serve for all cases.

It may be remarked that the objective signs just named are not always present (Miller, Roberts.) Some have dark skin and dull intellect.

I have observed that the parents may, and often do, appear to be quite healthy, with no indications, even to a physician's eye, that they must foster such a progeny. And what is more strange, they may not be in the line of any special hereditary disease, yet nearly every child seems to be doomed, sooner or later.

I have further observed that if one of the children was saved it was much more frequently the first—this to grow up perfect, or more or less feeble—the succeeding ones

falling, one after another. Sometimes one, two or three survive, fortunately, but generally many more die than live; only a small part living to grow up.

It is certainly disheartening to the physician to observe such sad waste; families decimated, children dying in spite of all the known means that are at his command; and, indeed, he is often blamed for his ill success, when he has exercised a skill and judgment than which no better could have been found. Such sad mysteries, if the expression be allowed, sometimes confront us, and will continue to do so until we learn more of the great laws of reproduction.

However, some cases are clearly enough traced to their true cause; one or both parents exhibiting distinct evidences of loitering disease; or, though healthy themselves, yet falling directly in the line of hereditary disease. Or again, there may be a peculiar kind of exhaustion, which will be noticed hereafter. When such causes can be found our embarrassment is, of course, at an end. We say to the parents, "Your children are *tender;* they cannot endure as much as other children; they are like a vine growing in the cellar, easily snapped, and if you bear others, they also will be liable to fall as easily." It is, indeed, well that such a satisfactory explanation greatly mitigates their distress of mind.

But such families are occasionally found where no evident cause can be assigned. The parents are able to boast of uninterrupted health, and of entire freedom from hereditary disease; their ancestors have lived to a ripe old age, perhaps, and where the fault or failure exists cannot be told with any degree of satisfaction.

Among the family faults, or "taints," as they have been named, rather carelessly, perhaps, are scrofula, rheumatism, syphilis, general anæmia, and what we now term sexual exhaustion. I shall not take time to discuss these at any great length, only to make a few remarks on the first and last named.

While all these faults have more or less to do with the

mortality among infants and children, it is undoubtedly the fact that scrofula is the most potent factor in the relation of cause, vitiating, as it does, the human system in such a manner that it is rendered incapable of withstanding disease to the extent that it otherwise would. In a word, scrofulous children are tender, delicate, frail; not in external appearance, perhaps, as already remarked, for they may be rosy-cheeked, even plump; "very healthy," as the parents will often say, but so in fact, as proved by the readiness with which they are swept away.

Now, all our observations, I believe, tend to confirm the opinion expressed by Rindfleisch (Ziemssen's Cyclopedia, vol. v.,) which is based upon the researches of Virchow, regarding inflammatory exudations in scrofulous persons. I cannot do better than to quote from page 636 of the volume named: "Virchow first called attention to the predominant cellular character of the scrofulous exudation; to its hyperplastic nature, and to the low vitality of the cells which compose it. For my own part, I would add that fresh scrofulous exudations contain relatively *large* cells, with glistening protoplasm, and a nucleus in the act of segmenting, or containing a double nucleus. I have received the impression that the emigrated white blood globules, which in normal individuals pass from the blood vessels of the inflamed tract to some adjoining surface, or to the lymphatics or lymphatic glands, or become collected into abscesses, have a tendency, in scrofulous persons, to grow larger on their way through the connective tissue. They swell up by the intussusception of albuminous substances, and in this very swelling die and slowly degenerate. The consequences of this peculiar anomaly of vegetation are felt in all the inflammations of scrofulous persons; less in the superficial catarrhs of the skin and mucous membranes than in the deeper parenchymatous inflammations of the glands and viscera."

If this be true, that all inflammatory processes in the scrofulous are almost sure to pursue such a course, we may

readily indicate to our own minds the cases in which lie the greatest danger; for whatever disease the scrofulous system encounters that has as a part and parcel any inflammatory process, of whatever surface or tissue, that disease will result, in a greater or less degree, in the complications and dangers just described. Hence, we have long ago learned to dread, in the scrofulous, the diseases to which children are especially liable which have an inflammatory or even a hyperæmic character. The same explanation, I have no doubt, can be given of the serious results which sometimes follow vaccinations in these subjects, even with the purest virus. No amount of care can always avert such unpleasant consequences. All are aware of the great difference in the results which follow ordinary injuries, as, for instance, of the joints, or other parts, the difference being determined by this deep-rooted all-pervading constitutional taint.

But another cause may undoubtedly be assigned for the low vitality in children of certain families; a cause which is now and then simply mentioned, but not really dwelt upon and distinctively urged, yet I believe a very prolific one in inducing the bodily condition under consideration. I refer to sexual exhaustion, commonly induced, as is well known, by the frequency or rapidity of conceptions; also by the ruinous practice of imperfect or incomplete coitus, and perhaps by repeated abortions. I cannot but think that sexual exhaustion as a cause of low vitality is not receiving its due share of attention; that the public is not properly enlightened, through the profession; that we are perhaps criminally negligent in failing to discharge so vitally important a duty, while it is carrying off, probably, as many as all the other causes we have named, except, possibly, scrofula, and even this, with all its evils, may frequently be engendered by it.

Sufficient, however, has been said on these points, as my principal object in this paper was to speak more especially upon the physician's part in the management of such fam-

ilies, by moral, hygienic, and medicinal treatment. That we may do much to fortify such constitutions against what may, and, indeed, must be, encountered, is admitted by all. Not that we can in all cases entirely eradicate the cachexia, but that we may so far neutralize its influence or power that the system will not so easily succumb to the influence of disease. In other words, that we may raise the grade of vitality, and perhaps, even, in some cases, place it on a level with the strongest.

The hygienic management of such families is all important, and pretty well understood, even by the laity, so that generally, as far as possible, it is carried out, and with great benefit too. But for this fact thousands would die in their early years who are now, in these days of better intelligence, saved. We are continually urging upon parents, and very properly, the importance of all hygienic points in the management of their families, particularly proper exercise, good air, and suitable food and clothing. The importance of proper food none will question, and it may be affirmed that the mother's milk, if healthy, and cow's milk, where it can be obtained pure, is all that is required. In regard to the various "foods" that are advertised so extensively, I have little experience, having, first, a strong prejudice against all such preparations for infants and children, because I believe nature to be the best chemist in providing her own nutriment, and secondly, because milk has invariably proved itself all sufficient.

Proper clothing is of equal importance, but it is readily understood that all these requisites cannot be carried out by a large proportion of the families, on account of pecuniary inability. Good air, good food, and good clothing are not the gifts of poverty. Fortunately, however, milk is, in most places, abundant and cheap, and a portion of it each day, with even coarse food, will build up many a poor body.

Aside from such judicious management, I know of none that offers to us more promise of success than a persevering

course of cod-liver oil. After much careful observation of its effects I can confidently affirm that cases such as we have been considering form a large class, in which the benefits of this *great remedy* are too little understood. Not that its value is underrated in the various and actual *diseases* that are commonly called scrofulous; not that it is neglected when disease has fairly invaded the system; for these all acknowledge its potency for good; but as a *modifier* of the whole organization, *before* disease has invaded it, even while it is yet unsuspected, and during the early months of life, then it is that this remedy is most valuable. As Prof. Geo. B. Wood says of mercury, so I say of this remedy, it "revolutionizes" the whole body, builds up every cell, reorganizes, so to speak, the vital forces, and makes the child apparently another being. Therefore, as a preventive, as a fortifier, I would recall the attention of the profession to it, believing, as I do, that it is too much neglected.

From happy observation, in very many instances, I have found it to so enhance the powers of endurance that disease would not take on so readily fatal forms, or meet with so many complications. With this understanding of the relation of cod liver oil to such constitutions, the natural conclusion is that the sooner its beneficial effects can be realized, the earlier it can be given, the more hopeful we may be of success.

In order to illustrate properly my experience in the matter, I will cite an instance, one of a number that could be given. It is a family by the name of Butler; the father and mother apparently healthy; had a child, the first, that with some evidences of a delicate constitution, has grown to be a boy of nine years. The second child, at eleven months of age, died of marasmus. The third began to decline at four months, after being urged to administer cod-liver oil. This the mother neglected, or rather refused to do. A few months after it was attacked with dysenteric symptoms and died. After the birth of the fourth child the

parents were urged still more strongly to administer the remedy early. It was neglected again, and this one died at the age of eleven months. She then promised if another should be born she would administer the remedy. She did so for several months, commencing soon after its birth, and it has now passed three summers, and is healthy. She has now the sixth, thirteen months old, to which was also given the oil faithfully, and which is as promising as the last.

I think the remedy should be administered early; if possible, long before the first summer, and continued diligently, in such doses as the little stomach will bear. I have not generally discontinued its use upon the occurrence of an ordinary diarrhœa or dysentery, for, with Ringer, I find it often seems to benefit such cases, especially the latter. It is needless to say it should be continued several months, if possible.

To omit the discussion of the operation of cod-liver oil is excusable, as our present knowledge has not enabled us to come to any satisfactory conclusion in other diseases in which its beneficial effects are acknowledged. Certainly, it is a compound of many and valuable constituents. According to De Jongh (U. S. Dispensatory,) these consist of iodine, bromine, chlorine, phosphoric and sulphuric acids, phosphorus, lime, magnesia, soda, iron, glycerine, various biliary principles, a peculiar substance, called gaduin, several other peculiar substances not named, etc. The thousands of gallons that are consumed every year is certainly good proof of the high esteem in which it is held by the profession as well as the public, even though its operation is somewhat mysterious.

I am aware that such a general recommendation of this remedy nearly approaches empyricism. And at this point I wish to call attention to the remarks of Niemeyer, that cod-liver oil is used in scrofulous diseases too indiscriminately; that it is needless to administer it to any but those who are *lean*, with little or no adipose tissue, etc. This is undoubtedly true in reference to tubercular affections, but I must dissent from it in the cases I have mentioned, especially in infants and young children who have *not* yet reached the tubercular or disease stage.

Many other points bearing upon this subject might be dis-

cussed, but I shall take time to offer a very few remarks upon only one, and that is, weaning from the mother. Much might here be said in quoting the opinion of others, but I must be content in stating some practical points which have impressed themselves after many years of observation.

It is evident that a healthy mother, with healthy milk, should nurse her own child; on the other hand, if unhealthy, she should not. But can we always determine accurately this point? It is a fact that a healthy, or, certainly, an apparently healthy mother, may secrete unhealthy milk. Such cases have come under my own observation, and doubtless many others have noticed the same thing.

Dr. Jacobi, of New York City, has recently (*American Journal of Obstetrics*, volume xii, page 541) given some indispensable instructions, which all must appreciate, and which very clearly intimate an endorsement of the points in infant therapeutics, etc., upon which I am speaking.

Bedford, in his "Diseases of Women and Children," gives excellent advice on lactation and weaning, which it would do well for all to consider. He refers to a child suffering with a persistent diarrhœa which apparently had baffled ordinary treatment. He examined the mother's milk and found it to contain colostrum, which should be found in the breasts for only the first few days after delivery, as is well known. He weaned the child and the cure followed spontaneously.

Similar facts I have known in regard to cow's milk. One family had two cows; from one the child was fed and did well. The other cow's milk acted speedily and always as a cathartic, and the mother told me that whenever she desired to administer a cathartic to her child she gave it the milk from this second cow. Both cows were equally healthy. Another family had a cow the milk from which always produced an eruption on the child's skin. After several trials and experiments, the milk was necessarily abandoned. Why may not human milk sometimes present the same anomalies?

The truth is, we may estimate approximately, never with precision; therefore, when a child fails to do well with good medical advice, it is certainly good practice to wean it from the mother, unless the time approaches too near the hot months, and

either find a wet nurse, or, better still, generally, raise it on cow's milk. Indeed, I generally feel a sense of relief when any circumstance induces parents to rear their scrofulous or tainted children on cow's milk. This I am willing to repeat with emphasis, having long ago formed the belief that mothers in these modern days are too commonly unfit to nurse their children.

It must be acknowledged that one very serious obstacle exists to the general adoption of this advice. It is the changed, unnatural condition of cow's milk as found in the larger cities; a change that appears to be decided and unmistakable. While this fact is sufficiently known and acknowledged, it is undoubtedly true that physicians in such cities scarcely appreciate it in its full length and breadth.

Milk in the city and country is, indeed, too different fluids; different in nearly all points. The fat is more irritating, because more indigestible; the casein forms in the stomach in larger and denser masses; even the salts are not in such perfect solution, besides being chemically changed by the external forces to which city milk is necessarily subjected. It is often rendered unfit for any stomach, especially that of the tender infant,

In the country the milk is at once and carefully carried to a cool, dark cellar, strained, placed in pans, and left undisturbed, and away from light and heat. It is scarcely changed, chemically or physically, from one milking to the next. It is simply sweet, pure, fresh, untouched, perfect. In the city it is in every respect exactly the reverse, particularly in warm weather; the long agitation in its transportation, the heat, the light, and too often the adulteration with chalk, magnesia, water, or whatever the peculiar "receipt" of different dealers directs, rendering it a pabulum entirely changed from the condition in which nature left it. Hence we might well say: In the city raise an infant on breast milk, in the country on either, all things being equal.

It is easy to perceive why such a discrepancy exists in instructions of writers on the management of infants; one having never known or tasted of pure country milk, the other entirely ignorant of the quality of milk as vended in the cities.

It is equally easy to understand, also, why a removal from the city to the country will often rapidly benefit the sick child, the food, especially the milk, more than the air, in my humble

opinion, conducing to this happy result. In the latter place the question of infant dietetics becomes much more easy, and, therefore, the therapeutical one proportionately simplified. Even the milk obtained from a cow kept in the city is often injured while in the udder, by driving her a long distance from pasture. She is almost sure to be fed more or less on slop, which is so easily obtained from neighboring dwellings, besides being kept at night in small, smothering stables.

All this, however, does not invalidate the fact, as I deem it, that pure, fresh cow's milk is only second, if not fully equal, to the material furnished by the mother if diluted with pure water for the first four months, afterward given in its full strength.

What, then, it is asked, is the best thing that can be done with infants in the large cities, who are obliged to remain? The answer may readily suggest itself, if we fully comprehend the causes which produce deterioration of milk. Imitate, as far as possible, the treatment it receives in the country, and particularly among small dairy-men, where only it is to be found in its greatest perfection. Avoid agitation, admixture, heat and light, and certainly all this can be done to a considerable extent. First, the supply for the family should be taken fresh from the cow, at least twice a day, carried by hand. and as short a distance as possible; secondly, this should be done in an absolutely cool and cooling receptacle, and third, it should be kept carefully in a cool cellar, or in a common refrigerator, from which it is to be taken only in small quantities, as required, warmed and given to the child. I am satisfied, from personal observation, that such precautions will repay the little extra trouble involved.

The conclusions which may be drawn from clinical experience, and to which I invite attention, are—

1. That "taints" exist much more frequently in children of families than in the parents.

2. That such taints produce a low grade of vitality.

3. That among these taints or defects scrofula and sexual exhaustion are the most common.

4. That external appearances and the family history do not always point to these constitutional effects.

5. That the unnatural and ready yielding of the body to dis-

ease is often the first evidence we have of the existence of taint.

6. That disease in such a body is not what the same disease is in one that is free from such fault.

7. That cod-liver oil is often capable of neutralizing such faults, or in other words, of revolutionizing the vital forces.

8. That to accomplish this the remedy is to be given early in life, and *before evident disease commences.—Med. & Surg. Reporter.*

EDITORIAL, ETC.

More Dental Schools.—University Schools are multiplying. The Harvard and Ann Arbor and University of Pennsylvania Dental Schools are followed by the Dental Department of the Vanderbilt University, at Nashville, Tennessee; and the prospectus of the Indiana Dental College, at Indianapolis, Indiana, at the same time appears. In the former, as the only familiar name, appears that of our time-honored old friend, Dr. W. H. Morgan, as Dean and Professor of Clinical Dentistry and Dental Pathology; and in the former a familiar name is that of Dr. Joseph Richardson, the author of the "Mechanical Dentistry," of that name, as Professor of that branch.

If these new middle-western Schools will start out men who will crowd out and crowd down the unworthy who now so largely hold possession in those parts, as well as elsewhere, it will be well. But alas! who hopes for it? Rivalry is good indeed, up to a certain point, but let the dental profession take warning from the medical as to the danger and degradation attending unworthy and unlimited competition. When professors in a Medical School boldly hold the doctrine that the public will soon learn to discriminate in favor of the unworthy and that things soon, in spite of degrees, "adjust themselves," —in a word acknowledge that the degree in itself is worthless,

though signed by them; it is time to take the lesson to heart which these things teach;—a plain lesson indeed, that there are two many medical schools.

We trust this is not to be construed as animadverting against these new schools. We do earnestly trust that they are the outgrowth of a "felt need" in the great West. If they develop into better schools than now exist, it will be the gain of dentistry. We publish their respective faculties in full, as follows:

Indiana Dental College.

P. G. C. Hunt, M. D., D. D. S., Professor of Institutes of Dental Science.

John Chambers, M. D., C. M., Professor of Descriptive and Microscopic Anatomy.

Junius E. Cravens, D. D. S., Professor of Operative Dentistry, Dental Histology and Pathology, and Secretary.

William B. Fletcher, M. D., Professor of Physiology, Histo-Chemistry, and Pathology.

Milton H. Chappell, D. D. S., Professor of Clinical Dentistry.

C. E. Wright, M. D., Professor of Materia Medica and Therapeutics.

Joseph Richardson, D. D. S., Professor of Mechanical Dentistry and Metallurgy.

Henry Jameson, M. D., Professor of Chemistry and Diseases of Childhood Incident to Dentition.

Dental Department of Vanderbilt University, Nashville. Tennessee.

Dr. W. H. Morgan, Professor of Clinical Dentistry and Dental Pathology, and Dean.

Dr. J. C. Ross, Professor of Operative Dentistry and Dental Hygiene.

Dr. R. R. Freeman, Professor of Mechanical and Corrective Dentistry.

Dr. J. R. Buist, Professor of Oral Surgery and Surgical Pathology.

Dr. T. A. Atchinson, Professor of Materia Medica and Special Therapeutics.

Dr. D. R. Stubblefield, Professor of Anatomy and Physiology

Dr. R. W. Steger, Professor of Chemistry and Microscopy.

H.

Hygrometric Properties of Glycerine.—The use of glycerine in many cases is indicated as an emolient, etc., but often its application to sensitive surfaces causes pain, due to its great affinity for the water of the tissues. It is interesting to know that although it attracts moisture and an uncovered vessel of glycerine will imbibe it from the air, that there is a limit to its hygrometric properties, such limit being found by careful experiment to be three parts by measure of glycerine to one of water. Beyond this, its point of saturation, it does not absorb water. When therefore the application of glycerine to an inflamed or denuded surface is found desirable, the dilution of this substance to the extent above suggested, it will be found a satisfactory means of remedying the smarting the pure article ordinarily causes. H.

Head-work, Hand-work, and Symmetry of Brains.—Measurements ranging through a diversity of subjects demonstrates that students have the left frontal region of the head more largely developed than the right; while the illiterate have the right occipital most largely developed. The dentist, working both hand and brain, should be of symmetrical brains, surely.

H.

MONTHLY SUMMARY.

Remedies in Headache.—Dr. W. H. Day makes the following remarks on remedies for headache:—

Croton-chloral has been recommended by Dr. Liebreich, of Berlin, as possessing a special action on the sensory branches of the fifth nerve. It is of most benefit in facial neuralgia, relieving pain and producing sleep. I have known it to prove very serviceable in some cases of nervous headache in which the disorder has chiefly occupied one temple, the occiput and neck, or one parietal bone; and in other cases not only to utterly fail,

but to indure sickness and nausea, if they did not previously exist. I generally give ten grains for a dose, in plain water, though it has been recommended to dissolve the remedy in a few drops of glycerine and then add the required quantity of cinnamon water, which, to some extent, disguises the bitter, nauseous taste. On this account, it may be given in the form of a pill, beginning with two grains and increasing the dose according to the urgency of the symptoms.

Hydrate of chloral is a remedy which has become one of the most frequently chosen of therapeutic agents, from its hypnotic effects. In large doses it is narcotic, and in very large doses it is said to produce anæsthesia. In nervous and spasmodic diseases, as puerperal convulsions, trismus nascentium, and the sleeplessness of chorea, we all recognize its value. In headaches, whether of the nervous or vascular type, when the pain is wearing out the patient and sleep cannot be obtained, chloral is of undoubted value. Chloral is a remedy requiring extreme caution in its administration whenever headache has recurred so often as to exhaust the patient's nerve force. Where the pulse has become small and weak, through constitutional debility or failure of the heart's action, a full dose may be followed by syncope. Incautiously administered, it may reduce the frequency of the respiration and annihilate the pulse. It lessens blood-pressure by its action on the vaso-motor system, and also by depressing the heart's action; hence it requires caution in cases where the patient, although severely suffering, is exhausted. In some cases, after its administration, I have observed such profound sleep and quiet and shallow respiration as to make me cautious in employing it where the circulation is feeble.

Chloral has a decided effect upon the vascular system, and if the pulse be firm or hard, the face flushed, or the excitement considerable, it relaxes the muscular walls of the arteries and reduces blood-pressure. It has been recommended not to employ a larger initial dose than ten grains; but I have never witnessed any effects of an overdose from twice the quantity. Very alarming symptoms have followed doses of forty and even thirty grains, so that its use requires caution, if the nerve power be much reduced.

Gelseminum is something useful in neuralgic headache and the neuralgia arising from decayed teeth. The powder and the tincture are the two forms for administration. The dose of the former is from one to two grains, and of the latter from ten to twenty minims. It is a powerful remedy, and, as many fatal cases are recorded from an overdose, its use requires caution. My experience of it is very limited, from having many more remedies at my command with which I am better acquainted,

In one case I gave a grain of the powder in a pill every night, for sleeplessness caused by neuralgic headache, and it exercised a most beneficial effect.

Phosphorus is one of the most important agents we possess in nervous exhaustion, and its efficacy is undoubted when administered in an unoxidized state, capable of being readily assimilated. No remedy requires more care in prescribing than this; for, while in small doses it is a gentle stimulant and tonic, in large doses it depresses the heart's action, like chloral, and is not free from danger.—*British Med. Journal.*

Teeth Set on Edge.—Dr. G. Dubelle intelligently writes to the *Druggists Circular* that all acid foods, drinks, medicines, tooth washes, and powders are very injurious to the teeth. If a tooth is put in cider, vinegar, lemon juice or tartaric acid, in a few hours the enamel will be completely destroyed, so that it can be removed by the finger nail as if it were chalk. Most have experienced what is commonly called teeth set on edge. The explanation of it is, that the acid of the fruit that has been eaten has so softened the enamel of the tooth that the least pressure is felt by the exceedingly small nerves which pervade the thin membrane which connects the enamel and the bony part of the tooth. Such an effect cannot be produced without injuring the enamel. True, it will become hard again when the acid has been removed by the fluids of the mouth, just as an egg shell that has been softened in this way becomes hard again by being put in water. When the effect of sour fruit on the teeth subsides they feel as well as ever, but they are not as well; and the oftener it is repeated, the sooner the disastrous consequences are manifested.

Sure Antidote to Poison.—Dr. G. Dubelle says, if a person swallows any poison whatever, or has fallen into convulsions from having overloaded the stomach, an instantaneous remedy, most efficient and applicable in a large number of cases, is a heaping teaspoonful of common salt, and as much ground mustard, stirred rapidly in a teacupful of water, warm or cold, and swallowed instantly. It is scarcely down before it begins to come up, bringing with it the remaining centents of the stomach; and lest there be any remnant of the poison, however small, let the white of an egg or a teaspoonful of strong coffee be swallowed as soon as the stomach is quiet, because these very common articles nullify a larger amount of virulent poisons than any medicines.—*Druggists Circular.*

Diseases of the Nervous System—Their Physiognomy.—Dr. W. T. Gairdner says that in all diseases of the nervous system it is of paramount importance to observe the attitude and bearing of the patient, his manner of answering questions, of putting out his tongue, speaking, eating, handling familiar objects, walking, etc. In all disorders attended with paralysis, tremor or convulsion, there will be at some time or other visible phenomena affecting one or other of the modes of ordinary action just enumerated; or there may be deficient power of evacuating or of retaining the excretions of the bowels and bladder. A slight tremor of the lips, and a hesitating utterance, as if the lips and tongue had no grip over the consonants, will, along with a peculiarity in the gait, an unusual stillness in the muscles of expression, and a slight disparity of the pupils, reveal with almost certainty an early stage of one of the most hopeless of diseases—general paralysis of the insane.

A similar but more complete absence of facial expression, without any of the other characteristics just mentioned, unless it be a flaw in the articulation absolutely limited to the labial consonants, will give the key to a more rare but far less dangerous disorder—double or bilateral paralysis of the portiodura; while a one-sided action of the face and brow, with a permanently open or half open eye on the side of the paralysis, and a twist of the mouth toward the opposite side, will show forth the much more common and equally isolated paralysis of the portiodura on one side only. An open mouth, dribbling saliva, an awkwardly moving or nearly motionless tongue, with very indistinct articulation, will reveal the labioglosso-laryngeal paralysis of Trousseau and Duchenne.—*Clin. Diagnosis.*

Method of Removing Hairs.—A writer in the Michigan *Medical News* gives the following method of eradicating superfluous hairs, as practiced by Dr. C. E. Mitchell, of St. Louis. The instruments required are, a pair of good ordinary forceps to seize the hair with, then a sharp needle, fastened to a small handle (a small, sharp pegging awl will do,) which is to be passed down parallel to the hair, within its sheath, till you reach the bottom of the follicle, then withdraw; melt some nitrate of silver in an ordinary spoon, and into this fluid hold the point of a small needle (similarly fixed as the puncturing needle,) till the silver crystallizes around the point like a minute ball, then insinuate this miniature caustic point into the previous puncture, cauterize the follicle of the hair bulb or root, remove all instruments, and in a few hours the hair will ulcerate out by the roots, causing no pain or lesion, with an entire removal of hairs, avoiding all possibilities of scrubby, dwarfish returning hairs.—*Med. and Surg. Reporter.*

Neuralgia.—Dr. Francis Pirotte gives numerous observations in which neuralgia was cured by the spray of chemically pure ether; the pains the most unyielding to all other means, ceased almost immediately. The ether is sprayed upon the painful part two or three minutes at a time, repeating it, if necessary, two, three, or four times, allowing sufficient time between each operation for the ether to completely evaporate. The temperature of the part at once falls several degrees below zero, the skin becomes blanched, insensible, and soon the subjacent parts become equally in a state of anæsthesia, and relief follows. Sometimes, the pain flies from one spot to another, but must be followed up. No unpleasant sensation follows its use, unless the ether be impure, when annoying sensation of burning and irritation is produced. It may be employed for pains from whatever cause, itching, cholera cramps, local inflammations, tetanus, rheumatism, burns, etc. Its advantages are facility of execution, immediate disappearance of the pains, and prompt cure, and economy.

In symptomatic neuralgia, it is advisable to aid the security and the rapidity of the treatment, by appropriate internal and external measures, as sulphate and valerianate of quinia, iron, tonic bitters, iodide of potassium, removing tumors, healing wounds or ulcers, etc.—*Dental News.*

Virchow on the Germ Theory.—In his late work on "Infectious Diseases in the Army," Prof. Virchow does not anticipate much to diagnosis or treatment from microscopic investigations of *vibrios, monads, micrococci, bacteria*, etc., with reference to peculiar forms of disease. He emphasizes the fact, however, that Billroth's supposed mother plant of all these—*Cocobacteria septica*—is always present in the human body itself, notably in the intestinal canal of healthy persons; so that a primary importation, an infection, or a transference, seems hardly required; it is already at hand, and wants only favorable conditions for propagating and further growing.—*Med. and Surg. Reporter.*

Chloral as a Counter Irritant.—Made into a mass with gum tragacanth, spread on paper and applied to the skin, it will produce a blister without pain. Applied as a powder, on cotton, it causes a painful burning sensation. By the former method, a portion is absorbed and the patient falls asleep. Its action is not so uniform as cantharides, but it is a mild vesicant, or an agreeable revulsive. The author quoted would commend such "chloral paper" to physicians, the more so, as it will keep for months without losing its activity if well prepared.—*Druggists Circular.*

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ARTICLE I.

Proceedings of Maryland and District of Columbia Dental Society.—Annual Meeting.

BALTIMORE, Tuesday Sept. 2nd, 1879.

The meeting was called to order by the President, Dr. J. C. Smithe, at 11 A. M. Prayer was offered by the Rev. Dr. Perry. The Secretary called the roll and reported a quorum present. Dr. T. S. Waters, of Baltimore, delivered the following address of welcome:

Mr. President and Gentlemen of the State of Maryland and the District of Columbia Dental Association:

In the performance of the very pleasant duty that has been assigned me I am here this morning to speak words of welcome to you as members of an earnest and honored profession, assembled to promote its advancement. While I feel that it is my province as a member of the dental profession and this Association, to work rather than indulge in attempted oratory; still my heart goes out to you and would have my unpracticed tongue utter the language of good-will and hearty welcome. In the name of the dental

profession; in the name of the three hundred and fifty thousand citizens of this great city, and within the walls of the oldest Dental College in the world, I bid you a hearty welcome.

Drinking deep draughts of inspiration from the memory of the past life and works of one of her most self-sacrificing and earnest working citizens, I would remind you that Baltimore, ever rich in great and good men, gave to the world its first Dental College. And by the efforts of the illustrious Chapin A. Harris and his worthy compeers, erected an enduring monument, better than marble or bronze, that shall serve to keep their memory green as long as our profession shall live.

The great good this institution has done, and is still doing, not only in our country, but throughout the entire world, can never be told. Since eighteen hundred and thirty nine, when it began its course of instruction, to the present time, its influence and example have been ever operating to secure a high order of education, and instil into its graduates a high sense of the dignity and honor of our profession. For five years she battled alone against prejudices and selfish ignorance, when she was joined by her sister institution of Ohio, and to-day no less than fifteen Faculties are following in her illustrious wake of labor and usefulness.

When Dentistry, first struggling into life, cried out for recognition from existing professions, Medicine, her big sister (or as some would have it her mother) in her lofty pride, disdained to extend to her youngling a helping hand, or to lend a sympathising voice; but as the red and blue of the illiterate barber's pole no longer mark the abode of the practitioner of surgery, (the now petted foster-child of the science of Galen and Hippocrates) so too, our profession has by its industrious and ambitious devotees, been elevated from the barber's stool and old-fashioned turnkey, to the elegant cushions of the latest improved dentist's chair, and improved instruments; and to-day threatens to invade the

most sacred precincts of the elder professions, and cull the rich fragrant flowers of popular favor so jealously guarded in the past. But yesterday despised, to-day the acknowledged and courted rival, bestowing upon suffering humanity not health alone, but restoring beauty itself, and discarding the former dread of the operation for the now blissful peace of a dreamy sleep. To-day, Medicine, in thanksgiving for the gift the genius of a Wells has bestowed Anæsthesia cries out, "Hail sister! God speed in your good work of helping us to make life less of burden in the many ills sin has made flesh heir to."

Born amid the snows of a relentless winter, alone the honored profession of our choice was compelled to weather the rough, bleak storms; alone she withstood the drenching showers of early spring, till now we are scenting the sweet blossoms of a sunny May, affording abundant promises of the rich harvest with which the Autumn will reward us. But let us not forget that as the price of liberty is eternal vigilance, so the price of success is never-failing effort. While our past has been rich in blessings, we should remember that these blessings came by the permission of a kind Providence, as the result of the constant, fearless exertions of those who have ever labored earnestly for the advancement of our profession, *forgetting self* in their noble toil. To-day we stand in the places of the honored dead, and if their cold lips could speak to us, they would call upon us to go on in the way *their* feet would have trod, until we, like them, weary and worn, shall have strength to go no further. The future of our profession will depend upon the honorable bearing and the diligent efforts for its promotion, of those who have devoted themselves to its work. Individual effort and labor, can accomplish a great deal, but it is to Associations that we must look for the greatest good and success. It was a recognition of this truth which a few years ago gave rise to the organization of this Association. Since its organization, we have seen the promises of its originators *more* than fulfilled, and in

looking back we find much of congratulation for the past, and of hope for the future.

Noticeable among the events of the year has been the union of the oldest Dental College with the youngest, blending the reputation of age with the vigor and originality of youth, the better and more successfully to do battle in the good and worthy cause of dental education. The mantle of the illustrious Harris has fallen upon the shoulders of one who has ever been zealous for the good of the profession of his choice, ever laboring earnestly for its advancement, and for a higher and more elevated standard of excellence.

This Association is now working successfully under a division of labor, (that of sections) rendering that possible to the specialist, which to the dentist (devoted however faithfully and laboriously to the study and practice of dentistry as an entire science and art) was impossible, for which it is indebted to the fertile brain of a R. B. Winder; nor should we forget his very able and comprehensive scheme of organizing a grand National Association, which knows no North, no South, no East, no West, but organized to accomplish the greatest good to the greatest number, and which was so forcibly presented to the American Dental Convention at its last meeting at Saratoga. The organization of this grand National body will certainly be effected at a called meeting of the National bodies now in existence, to be held in New York in September, 1880. In view of this fact, I desire to call the attention of this Association to one of the many very beautiful features of this National Organization,—it is that of membership. In order to become a member of and representative in this body, it is requisite that you should be a member of a State Dental Association, thereby guarding its rolls against any unprofessional *uncleanness*, and placing the responsibility (if any) upon the shoulders of the Association from which such a representative comes. In view of this feature, gentlemen, let us see to it that our rolls are kept clean and

undefiled. Let us adopt such rules and measures as shall exclude from membership any one who would reflect discredit upon our Association. Let us cultivate a higher professional standard, and show to the public a true, honest and professional character, and thereby become bright luminaries in this Grand National Association.

And now, gentlemen, I bid you welcome to the good work you have here to perform in this grand old Monumental City, and in behalf of my professional brethren, I not only welcome you to her public squares and beautiful parks, but to places dearest far than all others, our houses and our homes.

The President then delivered the annual address, as follows:

Gentlemen of the Maryland and District of Columbia Dental Association:

It has been your pleasure to honor me with the position of presiding officer, at this our annual meeting.

I cannot express too earnestly the grateful feelings I have towards you for this mark of esteem. And while I feel that some among you would fill the position more suitably, on account of their years of experience and important services rendered to the profession, yet I assure you none could feel more proud, and none could enter upon the discharge of the duties involved with greater zeal, or with a keener sense of their responsibility. I pray you, gentlemen, to aid me with your counsel, to view my shortcomings with charity, and to help my inexperience with your kindly counsel and advice.

We once more hold our deliberations in this distinguished city, the scene of many meetings, to again experience those kindly greetings and attentions which Baltimoreans know so well how to offer. And it gladdens my heart to meet you once more in the parent city of Dental education, where those have lived and labored for the advancement of our profession whom we delight to honor, and where now

prosperously exists the oldest Dental College in the world: a prestige that time cannot efface. While the advancement of our noble profession is so thoroughly illustrated by our numerous publications, it would be a needless waste of time for me to recapitulate the changes and the progress that has taken place during the past years. That will be developed as we proceed with our discussions.

In education, there have been changes here that we all hope and trust will be of great benefit in this, that we have one College in place of two. This change, no doubt, will favor a higher standard of education, and will benefit the profession at large, as well as the present institution. This example, I hope, will be followed by other cities, consolidating all into one, making that the college par excellence; selecting the best talent for instruction; infusing vigorous blood into the surviving institution, to give it added impetus as well as a wider field of usefulness.

To quote from an address of Prof. Hitchcock: "Our educational system I feel constrained to say, is, in my judgement, seriously defective. I am honestly of the opinion that our American civilization is over-doing itself professionally, not in quality, but in quantity. I know too, very well, that no profession is crowded near the top, but too much crowding at the bottom hurts the top. Under present conditions, the next best thing to be done is to inaugurate everywhere a system of rigid examinations. Such examinations may thin our ranks for a time, perhaps permanently. If only for a time, the wisdom of the policy will soon be vindicated. If permanently, it will prove that our ranks should have been thinned long ago."

This, in my opinion, is applicable to our profession now, and fully expresses my views on this vital point—our education.

I sincerely trust that in our discussions we shall be courteous and charitable to all. The points of view from which any given subject is considered by a public assemblage like the present, are, necessarily, nearly as many as the numbers of

those considering it, and as varied as the changeful colors of the chameleon. The solecism that "Orthodoxy is my doxy, and heterodoxy is every body else's doxy," should find no place and no acceptance here.

We do not all bring to a subject the same lights of training or experience, any more than we are all equally rapid as thinkers or as reasoners, while nature has not gifted all of us with the same command of language. Many who are not fluent talkers, become, perforce the closest listeners, reasoning frequently more closely than if they were included in the ranks of ready speakers. To those, therefore, whom modesty or the fear of committing errors of diction, debars from taking a more prominent part in our discussions, let us be courteous and kindly in our intercourse, remembering that the possibility of error is common to us all, and that those who may possibly be silenced by ridicule are not convinced or won to change of views, for ridicule is not argument any more than abuse is reason.

I regret that the impoverished condition of our treasury is such, that I feel it my duty to call the attention of the Association to it. We are in debt to our Treasurer and to the printer heavily. This would not be the case if all dues were regularly paid. I would suggest that we discontinue printing the proceedings in future.

I feel diffident in speaking to you about the seeming lack of interest on the part of many for our Association. There are many that do not attend, or if so, but for an hour or two daily. A faithful few are always here, and they have born the burdens. Let us look to it that each shall bear his proper part. The Scripture doctrine "Bear ye one another's burdens," is not applicable to us, at least does not seem to be successful with Dental Associations.

In conclusion, I earnestly request your assistance to promote the most perfect harmony, as well as to aid me in expediting as rapidly and thoroughly as may be the business of this Association.

Gentlemen, for your kind attention, I thank you.

On motion of Dr. H. B. Noble, the reading of the minutes was dispensed with, as they were printed and in the hands of the members.

Election of members being in order, Dr. C. E. Duck proposed the name of Dr. A. J. Volck, of Baltimore, for active membership in the Association. Dr. Volck was duly elected a member.

Dr. Winder proposed the names of Prof. F. J. S. Gorgas, Dr. John C. Uhler, Dr. Albert Price and Dr. Wm. A. Mills for active membership, all of whom were duly elected.

Dr. Winder proposed the names of Drs. Martin B. Scott, L E. Atkinson and Prof. Thomas E. Latimer, as honorary members of the Association. All were declared honorary members.

Under reports of business committees, Dr. Winder, chairman of executive committee, recommended that the hours for Clinics be from nine to eleven A. M.; to go into session at eleven and continue until four. Evening sessions at eight P. M. and continue until adjournment.

On motion of Dr. E. P. Keech, Dr. Winder's report was adopted.

Reading and discussion of papers being next in order, the President called them in order. Sections one, two, and three were held until the following day, when more papers would be ready.

Dr. J. J. Caldwell, of Baltimore, Chairman of Section four, introduced Dr. Martin B. Scott, of that city, who read the following paper on

Syphilis of the Teeth, Hair, Nails and Skin.

To discuss pathological lesions it is necessary to know the physiological functions of the tissues are involved. Physiology is the basis of pathology. We must study the conditions of health in order to understand the alteration in function caused by disease. Were I addressing an assemblage of physicians alone, I should have no hesitation in plunging into the anatomy and physiology of the teeth, because I would be

aware that very few doctors have given themselves the trouble to inform themselves upon this subject, being content to remand all cases involving these organs to their brothers who have made the oral cavity a specialty. But I feel in this presence, much as I once heard a distinguished lawyer and advocate say of his own feelings when arguing a chancery cause before Chief Justice Taney; that he could not divest himself of the fact that the Chief Justice knew a vast deal more of the subject than he did. Such is a source of serious embarrassment to me on this occasion. I feel that I am in the presence of the masters of this branch of the profession. But at the same time I am reassured by the consciousness that you will look kindly on me in my effort to do justice to the subject.

I was much gratified when consulting some of your standard works, to find that gentlemen of your profession differed somewhat after the same fashion as doctors differ. As I have said, somewhere, what would become of the profession if doctorsknew it *all*, and there was a dead level of equality. What would be the condition of this very respectable planet of ours, if medical schools did not annually turn out hundreds of unfledged, half taught Doctors, to slay their thousands before they learn how to treat disease, I leave you to imagine; or if all diseases could be once more shut up in Pandora's box; or if misery still kept death tied up in the pear tree, there would be an end of your branch of the profession; there would be an end of mine, unless we should then turn our attention to discover death, and set him to work.

In no countries is death so much feared and regarded with such horror as in Christian lands, which arises, I suppose, from the fact that they give us an account of a hell as well as a heaven. But in truth, death is the only friend that man cannot be deprived of, and for my part, should I ever discover the elixir of life, in my regard for the profession I shall keep it a profound secret. So long life to death!

But I find that there is one subject on which all seem to

agree, viz, that *teeth* belong to the class of dermoid tissues, and therefore, have you deemed it fit to select a physician to appear before this Association to consider the effects which Syphilis impresses upon the teeth, the skin, hair, and nails.

For myself, I consider the classification of the teeth as dermoid tissues as very strained. The celebrated anatomist, Cruveilier, says the teeth pertain to the epidermic system, organs analogous to the nails and hair, because they present a lamellated texture like nails and hair, and are analogous in their mode of development to the horns, nails and hair. That like these, they are wanting in the phenomena of nutrition; are formed layer by layer and are not liable to a renewal of the substances which compose them. Products of transudation—inorganic bodies.

This account will scarce pass current with this Association if Salter and Tomes are recognized authorities. But strange as it may appear, although the above description is not true in any particular, yet the authorities above mentioned arrive at the same conclusion, and I believe that the opinion universally obtains among you that the teeth must be classed as dermoid tissue. Salter seems to base his opinion upon the belief that the teeth are developed from the integuments of the mouth. Tomes tells us that the enamel is a special development from the epithelium of the mouth —dentine from the deep-lying parts of the mucous-membrane. Or again, he says that the dentine germs and consequently the dentine are indisputably derived from the *connective* tissue of the mucous-membrane immediately subjacent to the epithelium. The enamel organs are modified epithelium of that same mucous-membrane. Cruveilier tells us that the teeth do not inflame, are never the seat of tumours, or any pathological production. Salter tells us of necrosis, exostosis, of abscess, of warty teeth, and Broca has published a treatise on tumours of the teeth.

The teeth were long considered as true bone, but the differences do not admit of this classification. I make bold

to announce the opinion that neither classification is correct, whether we consider the teeth histologically, or from a physiological point of view. The functions of the teeth are varied, and differ in every respect from the skin and epidermis. They occupy the sweep of the upper and lower maxillæ, serve to preserve the symmetry of those organs, so that their growth may proceed to completion to serve the purposes intended by nature.

The teeth are necessary to clear articulation—a part of our telephonic arrangement; and lastly they are the organs for mastication. We hence, in view of their functions, find a highly organized and complex arrangement. Each tooth is a separate organ; it is implanted in a depression in the jaw called a socket; it is retained in its place by a peculiar arrangement. The socket is lined by a periosteal membrane, improperly called a root membrane, which is richly supplied with nerves and blood-vessels; it is continuous with the gums which are moulded over the teeth. The teeth themselves are constituted of a nervous and vascular pulp, surrounded by an ivory case over the crown of which is laid the dense enamel, covered by a membrane which, in order to carry out the analogy to the skin, has been named enamel cuticle. The fang and neck being covered by an envelope which in structure resembles bone, called *crusta petrosa*, or cementum.

Naturalists classify objects in nature from certain resemblances and differences observed between them. Thus, man has been classed by the advanced scientists with the ape, both have the perineus longus muscle which proves that the hand of the ape is a foot—(Huxley.) They class certain substances as muscles from similarity of tissue and function. In all correct classification, function is the basis, because function is the result of structure. No two substances of the same structure and tissue perform different offices in the animal economy. Cruveillier relying upon similarity of structure, classes teeth with the epidermic system; but the only lamellated texture about the teeth is the

crusta petrosa, of which existence he seems to have been ignorant. Salter and Tomes seek their classification from their supposed development, say they are developed from the tegument of the mouth and, therefore, modified skin. We must view the teeth thin as an apparatus peculiar in structure and peculiar, therefore, in function—the structure being adapted to their functions. Therefore, I must reject every classification and regard them as organs '*sui generis*.' Writers tell us that enamel is destitute of vitality; that dentine is not vascular, i. e. has no blood vessels—has no nerves. The sooner we get rid of such views the better. There can be no part of the human economy destitute of vitality. It is a broad statement but nevertheless true. Let an instrument touch the enamel, it is felt and the exact point of contact recognized. Dead matter is foreign to the organism, and nature proceeds to rid the system of it. The vascular and nervous supply to the dentine is as clearly demonstrated by physiological facts as by the scalpel or microscope, nay more so, the eye and the microscope are often deceptive: we may misinterpret a fact but cannot alter it. Salter says dentine is not vascular, i. e. has no blood-vessels, yet he gives us an account of warty hypertrophy of teeth, of necrosis, exostosis, of tumors of various kinds, and finally, narrates two cases of abscess of teeth. Inflamed teeth sensitive to the touch, yet no nerves! inflamed teeth whose dentine on fracture is pink from congestion, yet no blood-vessels! Abscess of teeth yet no blood! causing excruciating pain yet no nerves! The celebrated Joubert has told us that the os uteri is destitute of nerves—he could find none, and it is insensible to the touch. There must have been both vascular and nervous supply to perfect the teeth apparatus; there must be both nervous and vascular supply to maintain this apparatus in its integrity. I am aware that certain pathologists deny that any nervous influence passes along a nerve-fibre which can directly change the rate or character of nutrition of a part; and that some hold that it is an affair of the vaso-motor system.

Whence comes dentine repair, the occlusion of the dentinal tubes, but from vascular and nervous supply? Whence comes the condition of health in which these tubes are kept open?

Finally Mr. Tomes says he can see no reason why the tooth pulp should be supplied so richly with nerves, as no obvious advantage results therefrom; nor can I, if they serve no function of the teeth. No lymphatics have been traced into the teeth—this is a cautious announcement; why not have said there are no lymphatics in the teeth, for the same reason that it is said there are no blood-vessels in the teeth? But we are told that the teeth are composed of inorganic matter. The sooner we get rid of such terms as organic and inorganic the better for progress; it is a legacy left us by chemistry when in its swadling clothes; in its present infantile condition it is still retained, for we yet have in our text-books the division into inorganic and organic chemistry—as if there could be two chemistries; two sets of principles, so that when one failed, the other might be brought into service. I take it, without the presence of the so-called inorganic substance, phosphate of lime, that the human body would be a queer thing; it would, at least, be sans teeth, if not sans every thing. Lime is one of the substances of a large number of organized bodies. It is composed of oxygen and calcium so posited, the one with the other, that as soon as you disturb their relative positions they separate. The organized substance of wheat owes its properties both physical and vital to the positing of the molecules of which it is composed, and polarized light informs us of its structure.

The crystal quartz is as truly organized as the pea which contains the embryo pattern of the plant. The same is true of animal structure, which results from the peculiar arrangement of the molecules of matter of which it is composed. Thus it is as absurd to speak of inorganic phosphate of lime of teeth, as to deny the organization of animal structure. Structure is the result of the action of force upon

matter. Function is the result of arrangement of matter by the forces of nature. I repeat that we must regard the teeth as a peculiar apparatus, consisting of many parts curiously correlated for certain purposes. No master of the profession of dentistry, when he examines disease, but takes into consideration the anatomy of the organ, its relation to neighboring organs, and its relation through the nervous system to remote parts of the human organism.

Finally, to show to what lengths classification may be carried, I will mention that the celebrated naturalist, M. de Blainville, pushing analogical induction to its last limits, makes the skin the fundamental organ of the economy; derives all the organs of sense from the skin; produces the apparatus of locomotion from the elasticity of the skin, from which it derives contractility; the apparatus of digestion and respiration a modification of the faculty of absorption. secretion and generation but a modification of the exhalent function. The circulatory apparatus being the only one not immediately derived, he regards this as only an extension of the cellular tissue which is derived from the skin.

SKIN.

The anatomy, physiology and pathology of the skin is perhaps the most difficult of the human organism. Numerous savans have undertaken the work and arrived at different conclusions in regard to its structure, functions, and pathological conditions resulting from disease. I regard the skin as an apparatus composed of many organs adapted to peculiar purposes. Thus it contains the organs of *tact* in its papillae, into which we trace blood-vessels and nerves, and where the nerves inosculate. The inosculation cannot be traced by the scalpel or microscope, but is a physiological induction. It contains organs of sensation as well as tactile organs which serve to place the brain and nerve centres in relation to the external world. The skin envelopes the entire body, terminating at the external orifices of the body, being continuous with the mucus-membrane which has been erroneously termed an inner skin.

It terminates at the extremities by horny structure called finger and toe nails. The skin contains fibrous tissue arranged into fibres interwoven and crossed, to which it owes its highly important property of elasticity, flexibility and extension, and in virtue of which it protects the subjacent organs, and adopts itself to the varying conditions of the body during life. It contains sebaceous follicles which serve to lubricate and keep soft the parts over which the oily matter spreads. We also find in it hair follicles, glands and sweat-vessels. The skin is highly vascular, containing arteries, veins and capillaries; it is richly supplied with nerves and contains numerous lymphatics. Besides these organs we find a pigment structure which varies in individuals, but is most striking in the different races of men. Thus we have the white, the black, the copper color, the Mongolian color. This membrane is deposited under the epidermis. The color of the skin is interesting to the naturalist; it is *one* of the distinctive characteristics of the Negro, and is in correlation with other peculiarities of that race, which taken together, demonstrate that he is a distinct type of man—genus ape according to the *creation theory*, or a separate divergence from a parent stock or common protoplasm, but so far removed that we cannot trace his consanguinity to the white race. The result has been, on whatever hypothesis you may select a distinct species of animal, it would seem that nature has so marked the different races that we might be warned against the crime of miscegenation. Whom God has separated, let not man join together. The mulatto is a hybrid which dies out in the fifth generation—the albino is still a negro. The great geographer, Malte Brun, tells us of pie-bald negroes. But this is not the occasion to discuss the important question of races in the United States.

One of the most interesting set of organs of the skin apparatus is the lymphatics. The lymphatic vessels originate according to Cruveillier and others in a fine net-work which may be displayed by mercurial injection that passes into the

lymphatic vessels. This net-work of lymphatics is situated immediately under the epidermis, and above the layer of capillary blood-vessels. Cruveillier tells us that he has often injected the capillary (reseau) net-work in different regions of the body, and that M. Forman, who has given special attention to this subject, succeeded in showing this net-work and giving a perfect idea of its disposition, which forms when injected with mercury, a silver layer under the epidermis. From this net-work arise the branches which traverse the skin in every direction ; and from the internal face of the dermis lymphatic vessels proceed. The cabinets of the faculty at Paris contain many beautiful preparations representing the lymphatic vessels of the neck and head, prepared under the direction and supervision of Cruveillier, by direct injection of the cutaneous net-work of lymphatics.

NAILS.

The nails in man, are hard, flexible, elastic bodies which occupy the dorsal face of the last phalanx, and appear to support and protect the skin-pulp, so that the entire digital pulp serves for the *tact*. They present the appearance of scales of horn. The root of the nail is implanted in the fold of the skin which is called its matrix. The body of the nail is free on its upper face, but attached below to a net-work of extreme vascularity which gives it the rose color. The nails terminate in a free border. Nails are regarded as a product of secretion, and like the enamel of the teeth, void of vitality. I cannot admit the presence of dead matter as forming an essential part of the living organism. Nails grow from the root or matrix, and also from the capillary structure adherent to the body of the nail. Nails continually increase in length but not in thickness.

HAIR.

The hair, too, is regarded as a secretion, and therefore, a lifeless appendage to the living human form. This crowning glory of a woman—a bundle of dead hay ! Lifeless, forsooth, because the anatomist cannot trace blood-vessels and

nerves, and because the microscopist cannot see them with his glass eyes. Earth, air, fire and water were regarded for similar reasons as elementary bodies. One hundred years ago no one knew the composition of so universally diffused a substance as water; and combustion was supposed to be due to a principle of *lightness* called phlogiston; when a substance was burnt, the products increased in weight by losing this principle of lightness, phlogiston.

The hair is less devoloped in man than in any terrestrial animals, and hence the necessity of clothing. "Man differs conspicuously from all other primates in being almost naked; but a few short straggling hairs are found over the greater part of the body in the male sex, and fine down on that of the female sex. In individuals belonging to the same race, these hairs are highly variable, not only in abundance but likewise in position; thus the shoulders in some Europeans are quite naked, whilst in others they bear thick tufts of hair. There can be little doubt that the hairs thus scattered over the body, are the rudiments of the uniform hairy coat of the lower animals. The fine, wool-like hair or so-called *lanugo* with which the human fœtus during the sixth month is thickly covered, offers a more curious case. It is first developed during the fifth month on the eyebrows and face, and especially round the mouth where it is much longer than that on the head. A moustache of this kind was observed by Eschricht, on a female fœtus: but this is not so surprising a circumstance as it may at first appear; the two sexes generally resemble each other in all external characters during the early period of growth. The direction and arrangement of the hair on all parts of the fœtal body are the same as in the adult, but are subject to much variability. The whole surface including even the forehead and ears is thus thickly clothed; but it is a significant fact that the palms of the hands and the soles of the feet are naked like the inferior surfaces in all four extremities in most of the lower animals. As this can hardly have been an accidental coincidence, we must consider the

woolly covering of the fœtus to be the rudimentary representative of the first permanent coat of hair in those mammals which are born hairy. This representation is much more complete in accordance with the usual law of embryological development, than that afforded by the straggling hairs on the body of the adult."—(Darwin).

Such are the important conclusions of Mr. Darwin from the study of the human hair; he is, however, at a loss to account for the long hair in women, and must try again the effects of his magic wand—sexual selection. The hair presents differences according to sex, age and race. The negro presents much less development than the white race, resembling in texture rather wool than hair. The hair from that extremity attached to the skin is contained in a kind of follicle, which is the formative organ. The follicle is contained in the sub-cutaneous cellular tissue, and is prolonged to the surface of the skin by a sort of membraneous canal. For the rest, the hair is filiform, very flexible, variable in length, diameter and color, and has received different names according to the region of the body occupied by it.

It is evident from the structure of the skin and the numerous organs contained, that its functions must be as varied. It envelopes the body, and by its sensibility places the brain in connection with the external world; it is also in connection with the centres of the nervous system; it contains in the fingers tactile organs, discriminative organs—organs of perception in distinction to organs of sensibility. It contains exhalent organs, and is, therefore, a great depurator of the blood—a vast eliminator of foreign matter—morbific matter. In virtue of its lymphatic system it is a mighty absorbent. The importance of the skin in treatment of disease is thus apparent. It is an apparatus which is too little considered in reference to disease by the professor of medicine.

SYPHILIS.

No branch of pathology has given rise to more discussion

in regard to its origin than syphilis. The factions are divided into those who contend that syphilis existed in ancient times, and those who date it from the latter part of the fifteenth century, and ascribe its origin in Europe to Columbus' sailors. I do not hesitate to give my opinion that syphilis is a disease rather of civilized than savage life. The most ancient account of this disease is to be found in a Hindo work, by Sucrutas, who speaks at length of various ulcerations on the genital organs, and eruptions on the palms of the hands and the soles of the feet.

A work published in 1863—La Medecine chez les Chinois, par le Capitaine Dubry leaves no doubt that venereal and syphilitic diseases were observed and described in China in the most ancient times. "It is there stated that an author by name of Hoan-ty, who lived 2637 years before Jesus Christ, wrote on gonorrhoea with its complications of cystitis, nephretis, and epididymitis. He also is said to have described chancres, of which he notices two kinds, one of which suppurates freely, the other emits only a serous matter; he notices also the accompaning tumors." The author goes on to describe the disease in the most unmistakable manner. Hippocrates speaks of ulcerations of genital organs, tumors of the groin, carnosities of different portions of the body, extensive pustular eruptions. Celsus describes two varieties—ulcera sicca, ulcera humida: "Bumstead."

The lamentations of King David over the sharp pains in his bones, is evident of Holy Writ on the subject; and if Job was not afflicted with syphilis, then the devil forgot the greatest infliction he could have imposed, which is not likely from a biblical stand-point of view.

Ricord believes that the epidemic of the 15th century was glanders, not syphilis. He states that an analogous idea has been suggested by Van Helmont, who derives syphilis from farcy in consequence of bestial connections. Cazenaue believes that the epidemic of the 15th century was typhus.

Professor R. B. Winder has shed much light in regard to

its American origin, in his excellent and instructive paper concerning the teeth of Indians, a large collection of which he had an opportunity of examining in the Anatomical Museum at Washington City. In the hundreds of skulls of Indians of all tribes and natives of North America, the teeth, with a few exceptions are perfect—not a blemish. The exceptions proved to be in the half-breeds. He also mentions the instructive and important fact that syphilis introduced by sailors into one of the islands of the Pacific, destroyed nearly all of the inhabitants. What then are we to make of the fact that Columbus makes no mention of so fatal and terrible a scourge among the Indians? I have not been able to get an account of the teeth of the Indians of Central America and the West Indies. It would throw much light upon this question, in view of the recognized effects of syphilis upon the teeth of those to whom it had been transmitted by heredity.

In considering the effects of diseases of the human organism upon the teeth, we must take into consideration the effects of climate, and also the differences in structure of these organs in races of men on the earth. Races of men, like other fauna, flourish best in particular zones. When transferred from one to another these changes are marked. It has been said the white races at present inhabiting North America are exotics, and without constant accessions from Europe, would degenerate and finally become extinct like the pre-historic race whose remains are to be found in the mounds scattered throughout the West and South. It has been asserted that this deterioration is exhibited in the teeth of the American people; that their teeth are inferior in quality to the European. Whatever may be said of the *white* race, it is unquestionably true of the "*Negro.*" The splendid display of ivory of a century ago by the negro, no longer obtains. Formerly the fine teeth of the negro was proverbial, whose dazzling whiteness was increased by the contrast with his burnished envelope of ebony. A single African skull in some collection I have read of,

presents perfect teeth. At this period the teeth of the negro are as proverbially indifferent as formerly they were excellent. I do not ascribe this degeneration to the kind of food. The negroes of the South were well cared for in every particular; their food was plain but of the most nutritious kind. Sufficient date have not been collected to enable me to do more than suggest that such conditions of deterioration are worthy of consideration in discussing the effects of disease upon the teeth. One benefit I think will ensue from such discussions even by those so imperfectly informed as myself, which is, that the attention of the profession will be directed to the effects of various diseases upon the teeth and organs wanting in vitality.

We are indebted to Mr. Hutchinson, of London, for calling attention to the alteration of the teeth caused by syphilis. This condition he states is confined to hereditary syphilis, and is only exhibited by the permanent teeth. In diagnosing inherited syphilis he says, "We have very valuable aid furnished by the *shape* of the incisor teeth. In these patients it is very common to find all the incisor teeth dwarfed and malformed. Sometimes the canine are affected also. These teeth are narrow, rounded and peg-shaped: their edges are jagged and notched; owing to their smallness their sides do not touch and interspaces are left. It is, however, the *upper central incisors* which are the most reliable for the purposes of diagnosis. When the other teeth are affected these very rarely escape, and very often they are malformed when all the others are of fairly good shape. The characteristic malformation of the upper central incisors consists in a dwarfing of the tooth, which is usually both narrow and short, and in the atrophy of the middle lobe. This atrophy leaves a single broad notch (verticle) in the edge of the tooth and sometimes from this notch a shallow furrow passes upwards on both anterior and posterior surface nearly to the gum. This notching is usually symetrical; it may vary much in *degree* in different cases, sometimes the teeth diverge and at others they slant

towards each other." He then refers to a wood-cut to illustrate the deformity, and proceeds, "I have never seen such teeth excepting in patients of this class. In the majority of cases, however, the condition of the teeth is sufficient only to excite suspicion and not to decide the question. In a few rare cases, only one of the upper incisors is malformed, the other being of natural shape and size. In addition to the peculiar malformation above described, there are others, which, although less characteristic, are yet very valuable to a trained observer. It is only in the permanent set that any peculiarities are observed; the first set are liable to premature decay but are not malformed"

I am indebted to the kindness of Dr. I. L. Atkinson, of Baltimore, for the privilege of exhibiting two casts of the upper teeth, one of which corresponds wonderfully with the description of syphilitic teeth given by Mr. Hutchinson; in the other the teeth are deformed and notched. They were both taken by Dr. Atkinson from patients the subject of hereditary syphilis. Dr. Atkinson related to me a circumstance of interest in discussing this subject.

At a meeting of medical gentlemen when this question was discussed, a physician arose and announced that one of his children had notched teeth which supervened from a severe and protracted illness of scarlet fever. He was a man in robust health, and averred that he had never been the subject of syphilis, nor could he trace on either branch for the child any such taint. The child remained long after its attack of scarlet fever in poor health, but regained both health and strength, is hearty and robust and has never given the slightest symptom of syphilitic taint. Mr. Slater's Dental Pathology and Surgery, says of syphilitic teeth, "These conditions are usually, though not *always* confined to permanent teeth, which Mr. Hutchinson attributes to the fact that hereditary syphilis does not develope itself during intra-uterine life. Mr. Hutchinson supposes that attacks of syphilitic stomatitis are necessary to produce these malformed teeth, but he says, I quite agree with Mr. Tomes that

such an idea is unnecessary as an explanation of the condition in question, and it seems to me that the malformation of the teeth is probably more the result of perverted nutrition than of inflamation."

A most interesting discussion of the manifestation of syphilis in the teeth by the Association of Surgeons practising Dental Surgery, is reported in the London Lancet May, 1876. From this discussion it will be seen that opinion in regard to this lesion as diagnostic, is by no means settled. Mr. Napier read a paper on the subject. He hesitated to admit the manifestation of a semi-lunar notch upon the two front teeth as an infallable indication of syphilitic taint. He called attention to the rarity of its appearance in comparison with the number of certified inheritors of syphilitic disease. He attached importance to the fact that it is wholly confined to teeth of second dentition, whilst syphilis asserts itself from the commencement or very early in infantile life. Dr. Drysdale expressed his surprise that Mr. Napier with his great opportunities could express a doubt as to the character of syphilitic teeth. Mr. Mason agreed with Mr. Napier. Mr. Coleman said they were almost invariably connected with syphilis. Mr. Risdon being connected with the Children's Hospital, doubted whether the teeth spoken of as syphilitic were really so; he thought they might be the result of struma, and as they appeared after scarlet fever they might arise from mercury. Mr. Jonathan Hutchinson did not deny that disbelief in his theory was very prevalent in all ranks of the profession save in that which is concerned with diseases of the eye, and he did not wonder at it, nay, rather admired the scepticism of those who thought that the malformation of a single pair of teeth could not be indicative of specific disease. Had it not been for his experience of diseases of the eye, he might have joined their ranks. He was surprised to find at the Pathological Society, sometime since, how many did not understand the peculiar types of syphilitic teeth. If he saw a pair of central incisors with the peculiar lunal notch, he

would feel certain that the possessor of them had been syphilitic. Other teeth no doubt were often malformed, but not in that peculiar way, and he should, therefore, draw attention to those teeth only, viz: the *permanent central incisors of the upper jaw.*

He thought that the reason why other teeth were so affected, was probably owing to the fact that those suffering from syphilis had taken mercury, which also left its mark upon the teeth, and he inferred that those who had taken least mercury would present the most perfect syphilitic teeth. An interesting case had come under his observation.

Mr. Waren Tay was seeing his patients at the Skin Hospital, when a woman with acne on her face sought his advice. He found the peculiar syphilitic teeth and no other indication of that disease. She was sent to me for examination. There were no syphilitic symptoms, for she stated that her sight was perfect, but on examining her I found that she was suffering from defective vision, and had marked choroiditis, and this latter, in conjunction with the malformed teeth, is an almost certain proof of inherited syphilis. Concerning mercurial teeth, he thought they were stomatitic, and his attention had been drawn in that direction, because they were nearly always found in connection with lamellar cataract. Lamellar cataract is always found in connection with ill-formed teeth, and were generally connected with convulsions in infancy. He thought that the convulsions caused lamellar cataract; the mercury given to cure these caused the malformation of the teeth, and just as the central upper incisors were test teeth for syphilis, so the *first* molars were the test teeth for mercury; the other teeth not being so affected was owing to the fact that they were developed at a period when stomatitis was not so frequent.

Mr. Hutchinson finally suggested that Fellows of the Association should attempt to discover whether any peculiar signs were to be found in the teeth of those of a rickety or scrofulous diathesis, for information on those points was of the most vague description, and that in opthalmic practice

was to be found the best confirmation of syphilitic teeth. There were present the most distinguished members of the profession.

For my own part, when I reflect that syphilis is a disease which may affect every organ, apparatus, system and tissue of the economy, I cannot doubt that it affects the teeth. There is no tissue which may not be assailed by the dread disease. The nervous systems, the glandular systems, the skin, the mucous-membrane, the internal organs concerned in digestion, assimilation, elimination, and nutrition. But no matter what organ or system may be assailed, there are peculiarities of manifestation by which the experienced practitioner may detect it. Multifarious as are its forms when it invades the skin, we find the syphilitic mark, the syphilitic lesion. When the hair is affected there is the syphilitic sign; when it affects the mucous-membrane and fauces, it leaves its mark, on the liver it leaves its peculiar impress. Syphilitic headache differs from migraine. Syphilis is a specific disease, and is specific and peculiar in its manifestations. Now as the teeth form a most important apparatus of the human organism, developed and grown like other tissues under the operation of the forces which control nutrition; as they are supplied with blood-vessels and nerves like other organs, I do not see why they should not be affected by those diseases and those agents which affect the general economy. Mercury affects the teeth; general ill-health causes deterioration of the teeth; scarlet fever we have seen affects the teeth, and finally we have evidence that syphilis affects the teeth. The question remains, how? Does syphilis leave its diagnostic mark? I have no doubt of it. It is a question of the action of force on matter. Syphilis makes its peculiar mark on the skin, on the mucous-membrane, as far as we can infer on the nerves, the nervous manifestations are at least peculiar; on the liver, and why not on the teeth? If it does not, the teeth are exceptions to the rule. I believe that it does when it attacks these organs, and the thanks of the profes-

sion are due to Jonathan Hutchinson for having pointed out the "*tooth test*" *for hereditary syphilis.*

SKIN, NAILS AND HAIR.

In regard to syphilitic affections of the skin, nails, and hair, I shall have little to say. The subject is too extensive to be treated at length within the limits of this paper.

From what has been said of the complex organization of the skin, and the many important functions performed by the organs which compose it, we would not expect it to escape the ravages of a disease of such duration and persistence as syphilis—of a disease which confessedly affects the blood, whose integrity is necessary to the healthy function of every part of the animal economy. Accordingly we find syphilis manifested by disease of the hair follicles, and likewise of the nails in their matrix and body, giving rise to the various diseases to which these organs are liable. Dermatologists have classified diseases of the skin according to the anatomical lesion presented to the eye of the observer. Thus we have *exanthemata*, which includes a large class of dermoid affections such as erysipelas, roseola, scarlatina, urticaria— *Vesicula*, as varicella, eczema, herpes, scabies, characterized by an eruption of vesicles more or less numerous— Bullæ, as pemphigus, rubia—*Pustula*, as variola, vaccine, glanders, eczema, impetigo, acne, porrigo — *Papulas*, as lichen, prurigo—*Squamous*, as psoriasis—*Tubercula*, as eliphantiasis—*Macula*, including the various discolorations of the skin. Besides, there are numerous diseases which cannot be classified under any of the orders enumerated, such as lupus and pellagra. There is scarcely one of the diseases mentioned above which syphilis may not give rise to, and in many of them special and local treatment will be found necessary, in addition to the specific remedies generally used in the treatment of syphilis. But I would call attention again to the important fact, that no matter what variety of skin disease may be manifested, syphilis leaves its mark; as in the teeth, we have test teeth, so when the skin

is affected, syphi lis impresses its test mark. These are not always capable of being described so that they may be recognized, but to the experienced practitioner they are evident. Experience educates the eye as it does the touch. Indeed there is but one sense, that of "touch." When the waves of luminous ether "touch" the optic nerve, vision is the result: the motion is conveyed to the brain and translated into vision. The optic nerve is as much a tactile organ as the papillae or nervous pulp of the fingers. When the waves of sound "touch" the auditory nerve, it is recognized by the brain. When odoriferous bodies "touch" the olfactory apparatus, odors arise. When sapid bodies touch the gustatory apparatus, taste appears. In fact we feel with the brain, see with the brain, smell, taste and hear with the brain, in consequence of impressions upon our nerves, called nerves of special sense, which are carriers only, and all a modification of the touch.

It is then the "tactus eruditus" which so often enables the practitioner to recognize disease, when he fails to make others comprehend the steps by which he arrived at his conclusions.

Syphilis should be classed with the so-called zymotic diseases. The smallest quantity of virus serves to contaminate the entire organism. It is a self-limiting disease like small-pox, and like small-pox is often capable of elimination by the forces of nature; it may be modified in its course by remedies—may be cured by remedies—may prove fatal in spite of remedies. It has its period of incubation; its eruptive stage; its period of progress. An attack of syphilis gives partial or complete immunity from a second invasion. It may be transmitted by heredity, and in the opinion of some, the immunity gained by the parent may be transmitted to the offspring.

The second stage of syphilis, as it is called, is characterized by affections of the skin, more often of the exanthemata, whose duration is variable. But what is of great diagnostic value, is that the eruptions of this stage are

symmetrical—affect the two halves of the body at the same time. We find symmetrical ulcers in the tonsils, not spreading either in width or depth. There is also loss of hair. The exanthem usually takes from a fort night to a month before it is fully out, and about two months to decline. The color of the eruption is of a peculiar coppery hue, which is one of the syphilitic "test marks." The rash may be merely congestive, it may be squamous, papular, postular, bulbous, eczematous. As a rule, the eruption of the secondary stage involves only the superficial layers of the skin, differing in this respect from the tertiary manifestations. Although there are a variety of eruptions, it does not imply a difference in the nature of the virus—this depends upon the tissue attacked. Peculiarities of constitution may determine the kind of eruption—the same kind of chancre in different individuals may be followed by different kinds of eruptions. The affections of the skin in the tertiary stage are not symmetrical; they involve ulceration of greater or less depth, and consequently leave cicatrices. According to Cazenane, syphilitic cicatrices present a peculiar aspect—they are round, depressed, of a dull white color, furrowed sometimes with deep bands.

Syphilitic eruptions present a coppery hue; they never present the red color of inflamation—this is one of the syphilitic "test marks." It would require a volume to treat of syphilitic eruptions of the skin, it would require a disquisition on dermatology to do justice to the subject. I shall, therefore, on this occasion, hold myself excused for not dwelling at greater length upon the lesions caused by syphilis, contenting myself with having pointed out some of the syphilitic skin marks arising in the progress of the disease. I feel assured that you will readily excuse me, and probably thank me for my brevity in this respect.

Syphilis is a disease which has been much studied of late, and much progress has been made towards unravelling its nature, the laws of its progress, its termination, as well as its modes of transmission. Yet much remains to be done;

it cannot be said that the disease is understood in its length and breadth. Investigators differ among themselves in many important particulars. Thus, Hutchinson rejects the "duality theory" of syphilis as an unnecessary hypothesis, whilst Diday says secondary attacks are not so rare as has been supposed. Again, Hutchinson holds that what we call the tertiary stage is only the sequel of syphilis; is never spontaneously cured, and liable to remarkable relapses when relieved, the lesions being due to the alteration in the constitution of the economy, and not the result of the continuous action of the virus.

In conclusion, I trust that you will bear in mind the request made by Mr. Hutchinson to the association of surgeons practising dentistry, and endeavor to ascertain whether any peculiarities are to be found in the teeth of those of a rickety or scrofulous diathesis. And I would ask you to give the results of your observations of the effects of all diseases, which in the course of a long and active practice, may be submitted to your inspection. We must look to your special branch of Surgery for information on all such points. The appeal I am sure will not be in vain, when I remember the rapid strides you have made within a few years. You have lifted your profession from being merely a mechanical calling, to be a branch of Surgery; an art based like other specialties upon the broad principles of Anatomy, physiology and chemistry. You will not deem me intrusive, I am sure, if I caution you against relying for your opinions upon "authority." This is the bravest progress of medicine. I dislike to be knocked down by "authority." Virchow says so, Neimeyer thinks so, and the like, which is supposed to be quite a sufficient answer to any views of your own. I have a high regard for worth and excellence. I honor the great men of our profession, but at the same time it will do no harm to do a little thinking for ourselves. I fear that I am not an "idol" worshiper, and sometimes wish that an iconoclast would make his appearance. In the history of the world

they have been instruments of progress, of intellectual and moral development. Jesus Christ was a great iconoclast, although many an idol has been erected in his name. Gallileo in his time was a great iconoclast, although he perished, for they would not permit the old man to *see* his friends until he was *blind.*

Lord Bacon was a great breaker of idols—he broke the idols of the tribe, the idols of the den, the idols of the market, the idols of the theatre, as well as the worship of the ancient philosophy. Such was he at least for English speaking people, although Draper tells us he knew nothing of philosophy. Thus is Draper an iconoclast. Darwin, and Huxley, and Tyndall, and Spencer, are all iconoclasts

Robespere and Oliver Cromwell were iconoclasts of the first water. And movement, and progress, and intellectual and moral development has been the result. Morality is based upon intellectual progress, and the time may yet come when a man will do *right* from a principle, and not because of reward in heaven, or fear of damnation in hell.

When I am met with "authority" and knocked on the head by it—stunned—can't answer a word, I sometimes think of a letter which Oliver Cromwell wrote to the Scotch Presbyterians in reply to theirs, urging certain dogmas to be imposed upon the nation. He concludes thus, "I beseech you brethren, in the bowels of Christ, to think that it is *possible* that you may be mistaken."

The paper was discussed by Drs. W. H. Atkinson,* and J. J. Caldwell.

Dr. Caldwell.—I want to say that my working brother, Dr. Scott, will not be here to-morrow. I merely wish to state I respect a man who is dogmatic. If he is true, I want him to live by what he says, and die by it.

On motion of Dr. Foster, the Association at fifteen minutes of two took a recess until half-past two.

*Note.—The reporter, being an amateur, hopes he may be excused for not getting Dr. Atkinson's remarks; even fully enough to make a fair report.

AFTER RECESS.

Dr. Foster.—I should like to hear from Dr. Scott on this subject. While I think the paper was exceedingly able, I think the Doctor has not entirely exhausted the subject.

Dr. Scott.—I have nothing to say, except that I should like to hear from the gentlemen present, especially on the syphilitic taint, and I should like to hear a discussion upon any point I made with regard to the teeth being dermoid tissue. I cannot classify them at all. I should like to hear from the gentlemen present.

Dr. Foster.—Just in regard to that one point. How are we to find out if cause of certain marks upon the teeth is syphilis. The question arises whether we can ask the patient about his father? Whether he has been a fast man or not? Whether he was known to have had syphilis or not is the next question, and one that is not asked. That comes again into the hands of their medical adviser.

To be sure, Mr. Hutchinson has had a great deal of experience, but whether he can say these things positively I very much doubt. They argue on these things and present them to the Dental profession; the Dental profession accept them as facts without judgement, that they are syphilitic. Why are they syphilitic teeth? Why will not other things manifest themselves in malformation of the teeth. I believe that many times when they say these teeth are syphilitic they are mistaken.

Prof. Winder.—I do not know of any light I can shed on this subject. It is one I have not investigated. That these teeth may be manifestations of syphilis may be true; that it has been demonstrated to be so, I am inclined to doubt.

It is simply a theory. I do not know that Mr. Hutchinson himself is as positive as he might be on the subject. It is a suggestive question. One that puts men to thinking whether it is from the action of diseases or other surroundings. I cannot certainly let myself down to believe these teeth to be a certain diagnosis of hereditary syphilis; still, at

the same time, it may be so. It is a question that must be circulated. There must be a great deal of statistics taken to establish it as a fact. We know positively, that any interference with the development of the teeth at any time during their growth, will interfere with them precisely as it would with any other organ. I believe with Dr. Scott, that teeth are governed by the same physiological laws that other organs are.

These causes, of course, would interfere, but as to the specific action of syphilis, I do not suppose anybody claims to understand or know anything about. That it is hereditary, we have the best knowledge in the world. Therefore, I would not like to say that it could not leave its manifestations upon the teeth.

Dr. Caldwell.—I think, Mr. President, that Dr. Hutchinson claimed to have concomitant testimony to prove his theories. Syphilis manifests itself at one time in one portion of the body, and then in another.

Dr. Atkinson.—A word as to whether these teeth are dermoid structure. Whether they are dermal or hypodermal or epidermal?—They are all. They are epidermal in the enamel, dermal in the dentine, and they are hypodermal in the cementum and pulp.

Dr. Foster.—If there are no other gentlemen wishing to speak upon this paper, I move you that it be passed until to-morrow, when other papers will be read on this subject. The motion was carried.

Dr. Winder.—I move that we suspend the rules, as I have something I wish to bring before the Society. Carried.

Dr. Winder.—There are two things I wish to speak about, one of which Dr. Waters mentioned in his address of welcome this morning. He states, and I believe it to be a foregone conclusion, that next year there will be inaugurated a great National Convention in New York. I believe that the membership in that organization will consist of the memberships in State Societies, therefore, every man who is a member of a State Society, par excellence, is a member of that organization.

It will be any man's privilege to go there and take part. I think that right on the eve of this thing, it is our duty to see that the requirements of the ethics made by this Society are faithfully copied. Gentlemen who do not like to be bound by ethical laws should not come in here, and subscribe to the ethics. Having promised to practice the profession according to the ethics, he should be compelled to do so.

Every man we place in this Society, as soon as he is a member of it, is entitled to representation in that National organization. No man can be a member of the National without being a member of a State Society. That is the matter I wished to speak of in regard to Dr. Waters' paper.

In regard to what fell from the President's lips this morning, I wish to call attention to that part in which he alluded to the printing of the proceedings. I do not know the financial condition of this Association. I know that as one member of it I am willing to be taxed, and I do not want the Society to pass a year without printing the proceedings. I want some action taken to provide a means for this printing. I propose that when there is a full meeting, the Treasurer make a report so that we can take action. This is a matter of importance to us; we are visited by gentlemen. We have had to-day a paper from one of them that was very interesting, and I think we should weigh the matter well before we decline to print our proceedings.

Dr. Foster.—I agree with Dr. Winder in regard to the publication of the proceedings, and I think it well enough to bring it up to morrow morning. I do now make it a motion that the Treasurer be requested to make a report of the state of the treasury. I think none of the gentlemen present would object to a slight taxation. The motion was carried.

The President.—Was on the Publication Committee for three years, and I know we have had a great deal of trouble in getting printers and then paying them. This year we

had nothing whatever to pay the printers. It kept growing worse and worse, and I thought it well to cut down expenses a little.

On motion of Dr. Winder, the Association adjourned.

American Academy of Dental Science.

The twelfth annual meeting of the American Academy of Dental Science will be held in Boston, on the last Wednesday in October, 1879, at 10 o'clock A. M. The annual address will be delivered by Dr. C. A. Marvin, of Brooklyn, N. Y.

E. N. Harris,
Cor. Secretary.

ARTICLE II.

"*A Few Thoughts on Filling Teeth.*"

BY T. H. PARRAMORE, D. D. S.

The first and most important question that presents itself to the mind of every honest practitioner of Dentistry is, how he can best and most faithfully meet the demands of those who have entrusted themselves to his care, and save for the longest time those organs so essential to health and happiness, the teeth.

Until in coming ages science shall have furnished us a material or process by which those substances so destitute of live material, (enamel and dentine,) shall be enabled successfully to combat the encroachments of decay, and repair the injury already done; the dentist's principle dependence is in *filling.* Therefore, this question of *filling* is to the dentist the most important with which he has to deal. Filling teeth is necessarily, in a great measure, a mechanical process, but in order to be a successful *filler* of *teeth*, a man must be thoroughly acquainted with physiological and pathological conditions, as these are the indices that point out the material suitable for each case. In my opinion no dentist can afford to dispense with any one of the standard materials at present presented to the profession for the purpose of filling.

The first thing to be considered is the character of the tooth

or teeth to be operated upon, age, sex, and physical condition of patient, and (which is often a very important question,) can we see and have control of the teeth in the future as often as we deem necessary. If the teeth belong to what is known as class first, ("The Principles and Practice of Dental Surgery"—Part II., Ch. II.,) and there are no well-defined physiological or pathological conditions present, rendering such practice unsafe, gold is the best material indicated. In patients with teeth of this class, symptoms that would render filling with gold unsafe are rarely found, but sometimes in the case of females during the period of pregnancy and lactation, or in the case of young patients (principally females,) the teeth are found so sensitive as to render the use of so good a conductor of heat and cold unsafe. The thermal changes produced by putting so fine a conductor in contact with irritated dentine, may result in inflamation of a serious character.

In the first of these cases the trouble ends when the period of lactation is completed, the second proceeds from troubles often in organs remote from the teeth, and depend upon their restoration to health for its removal. The best practice in such cases is to fill with oxy-chloride of zinc or gutta percha, until hypersensativeness is relieved, then fill permanently with gold. These rules apply to the other classes described in the chapter above referred to; they, however, require greater care and a longer time, and in some cases it is never safe to fill with gold or amalgam. In some other cases (this rule is specially applicable to young patients,) after being filled for years with gutta percha, teeth at first unfit for such a filling will be so greatly improved by the deposition of mineral matter as to have a metalic filling. In very many cases in all classes of teeth, gold is the very best material to use; but in teeth of an unhealthy blueish or white chalky character with very thin friable walls, or in mouths where a decided acid reaction exists, gold should not be used.

Gold is a metal upon which the oral secretions have absolutely no effect; it does not corrode, does not shrink, and, therefore, when well inserted makes a perfectly water-tight filling. It is sufficiently hard to bear the mar of mastication; its color is but slightly objectionable, it works easily when properly treated,

and when used discreetly is decidedly the ***very best*** material dentists have at their command. It has its objectionable points, however, first among which I consider its conductile properties, both thermal and electrical. The first would render it an unsafe material to use upon hypersensitive dentine or near an exposed nerve. When two materials of unequal electric conductility are in contact, the electric fluid acts upon and disintegrades the poorer conductor. As stated above, *gold* is a very fine conductor of electricity, and it is well-known that tooth substance is a very poor conductor of electricity, therefore, when teeth (in mouths where such a condition exists or is apt to exist), are filled with gold, we are apt to see them decaying around the gold and the fillings soon dropping out. In what mouths are electrical influences apt to exist? In deciding this question we must be guided by the appearance of the teeth, gums, and mucous-membrane of the mouth and chemical condition of the oral secretions.

Next in order to gold as a filling material, I would place amalgam. The profession is too well acquainted with the material sold as amalgam for it to require any description or definition at my hands. It should be used with care and discretion, and when so used, fills a place at present occupied by no other material known to the profession. It works easily, sets quickly, making a filling sufficiently hard to withstand the greatest amount of mastication; can be readily packed against the most frail walls, (which is often a very difficult and hazardous undertaking with gold;) it is a material with which we can often save for a long time the teeth of poor patients unable to pay for expensive gold fillings, it serves a good purpose in building crowns upon old molar roots, a work that would require hours with gold but can be accomplished in a few minutes with amalgam, and often lasts longer than such a work of gold. There are places in the mouth when the best operators often fail to put in perfect gold fillings; in such a place an average dentist would put in a first-class amalgam filling, which would be decidedly better than an imperfect gold filling. It often answers a good purpose in permanent teeth of children, to remain until they grow old enough to bear the more tiresome operation of filling with gold. There are, however, many seri-

ous objections to this in many respects admirable material. Its color is at best bad, turning in some mouths perfectly black; it has a tendency to draw away from the walls of a cavity or what is called "ball;" this tendency can be generally obviated by observing proper care in its insertion. The objection urged against gold on account of its conductile properties applies to amalgam, but in a modified degree.

There is no material known to the dentist, that in so many respects measures up to his ideal filling material as gutta percha. Gutta percha is a vegetable production, but is prepared for the dentist's use by mixing with it carbonate of lime, quartz, etc. It is a poor conductor of heat and about as good a conductor of electricity as tooth substance; it is non-irritant; has a good color, makes a water-tight filling when properly inserted, and has but one serious defect that I know of, and until this is overcome it can never be considered more than a temporary filling material. It is so soft that it wears away rapidly. But with this defect it has in many cases, such as in children's teeth and the teeth of young persons where there is a great deficiency of mineral in proportion to animal matter in cases of hypersensitiveness of dentine, as a non-conducting substance under gold fillings in cases of a nearly exposed nerve, etc., no equal. I use no other material for filling the front teeth of many of my patients whom I can have come to my office as often as I desire, adding more gutta percha as fast as the filling wears away.

There are a great many preparations of oxy-chloride of zinc, known by different names, but they are essentially the same. It should only be used (in which case it has no equal) as a capping for exposed nerves, together, but not combined with lacto phos. lime, or by mixing the oxide with creasote or oil of cloves. Place in contact with exposed nerve and fill cavity with oxychloride, after which remove part of the oxy-chloride filling and fill permanently. The principle reasons for not using oxychloride as a permanent filling are, it is subject, on account of its softness to the objection urged against gutta percha, and it softens, and disintegrades in all mouths after a while, and in most mouths very quickly.

If I have succeeded in demonstrating that each case claiming the attention of the dentist requires special treatment, and

shall arouse to a closer study of this subject so important to our progress as a profession, one earnest worker, I shall feel richly compensated for the labor it has cost me.

ARTICLE III.

Transactions of the Odontological Society of Great Britain.

ORDINARY MONTHLY MEETING, June 9th, 1879.

The President announced that Mr. Howarth had presented to the Museum an aluminium and rubber denture, which had been worn for fifteen years. The plate had not been struck up, but had been made by pouring melted aluminum into the cast; it had then been trimmed and vulcanized. Notwithstanding the number of years it had been in use it showed no signs of deterioration.

Mr. Storer Bennet showed a contrivance for twisting malplaced teeth, which he had found very useful. Being very simple, he had no doubt that something similar must have been adoped by others, though he had not been able to find any mention of such an apparatus either in the Society's Transactions or elsewhere. It consisted of a vulcanite plate, in which the rubber was thick behind the tooth to be moved; but cut away immediately behind the part to be drawn in. Through the thick rubber a tunnel was cut, extending from immediately behind the outstanding edge of the offending tooth to the lingual surface of the plate, and deeply countersunk at its posterior extremity. This tunnel was for the reception of a hook made of half-round gold wire; the front of the hook was adjusted to catch on the projecting edge of the tooth, whilst a small "jump ring" was soldered to the other end. The back of the tunnel being countersunk, the ring was protected from irritating the tongue. Two short slits were cut in the free edge of the plate opposite the posterior extremity of the tunnel, and their anterior extremities joined by a shallow grove on the palatine surface of the plate. A small elastic rubber band was drawn into the grooves and connected

with the ring at the back of the hook. No harm could be done to the palate by the elastic band, as it lay in the groove, and was flush with the surface of the plate. By this plan no cumbersome and unsightly apparatus was visible in the front of the mouth. Although the traction was slight at any given time, yet, being constant, its actual moving power was very great. The teeth were moved with but little pain. It was easy of application, and by giving the patient a few extra bands, with instructions to change them every few days, many unnecessary visits were avoided.

Mr. Chas. Tomes exhibited a regulation plate, the invention of Mr. Palmer, of Cheltenham, which he said was one of the simplest and best he had yet met with. Mr. Palmer stated that he had succeeded in getting with this instrument an expansion of the whole arch varying from 1-16th to ¼ inch per month, with very few attendants.

The President then called attention to an apparatus made by Messrs. Winderling, of Milan, which had been sent for exhibition by Mr. C. J. Fox, and which had been designed to facilitate the packing of celluloid and vulcanite. It consisted of a light iron frame; in the center of this was a small platform on which the flask rested, raised about four inches from the table. Beneath the platform were two burners for gas or spirit,—one for heating the flask to 212° F., the other to heat the celluloid to 280° F. A roll of celluloid was placed in a cylinder attached to the face of the flask, and when sufficiently liquefied was forced into it by a piston worked by a screw with lever handles. The advantages claimed for the apparatus were:—First, that the plaster not being heated beyond 212° F. remained very hard, so that metal models were not required; secondly, the case being flasked in one solid body of plaster and never opened, there was very little chance of raising the bite or of displacing any teeth, bands, etc. To obviate the difficulty of removing pieces from the solid block of plaster small brass plates were inserted while flasking, in such a manner that the plaster easily separated into pieces on

removal from the flask. There being no steam pressure, there was no danger from this source.

Mr. Oakley Coles said that, from his experience of the results obtained from other machines which had been designed for the same purpose, he could not help thinking that Mr. Winderling had introduced into this several unnecessary complications. He knew of several already in the market,—for instance, the machine invented by Mr. Gartrell, of Penzance, and that introduced recently by the Dental Manufacturing Company,—which would complete the process in considerably less than two hours. About twelve years ago a very similar apparatus had been brought before the profession by Mr. Payne, of Great Russel Street, but the results obtained by it were not so satisfactory as those obtained by the ordinary method. He failed to see how raising the bite could be avoided by this process more than in any other; this was due to the teeth sinking in the plaster, and this would be quite as liable to occur in the apparatus before them as in others with which they were familiar. It was, no doubt, a very ingenious piece of mechanism, and the inventor deserved great credit for having brought it to such perfection; but it appeared to him too elaborate and complicated, and not likely to give any better results than the simpler processes with which they were already acquainted.

Mr. Hutchinson said he had had the advantage of seeing the apparatus worked by Mr. Winderling himself, and he thought it offered more advantages than Mr. Coles had given it credit for. Although complicated in appearance it was really simple enough in structure. In the first place the plaster was never exposed to wet heat, nor above 212° F., and consequently remained very hard, so that it was impossible to squeeze the teeth into the plaster: then the celluloid entered the flask by an aperture only one-sixth the diameter of the piston; and when full the surplus escaped through three small openings at the back, so that there was no undue pressure on the teeth. And lastly, the

uniform temperature at which the celluloid was kept rendered it much less liable to shrinkage. Still further to obviate this tendency, Mr. Winderling advised that the plate should always be kept in cold water when out of the mouth. He asserts that celluloid will never warp so long as it is kept moist.

Mr. Coles asked how it was that Mr. Winderling had come to the conclusion that dry heat was better than moist for working celluloid: most experimenters had found steam or oil best to work with.

Mr. Weiss said that he considered the point on which Mr. Winderling appeared to lay so much stress, that of working the celluloid at a temperature not exceeding 212°, was itself a great mistake.

The great objection to the use of celluloid was its liability to scratch and fray in the mouth. He had found that this liability was greatly diminished by submitting the celluloid to as high a temperature as possible, short of destroying its composition. A plate which had been kept for half an hour at a temperature of 280° would be found to be much harder and denser in structure than one which had not been heated beyond 212°.

Mr. Charles Tomes said he could not quite understand how the difference between the diameter of the piston and that of the aperture through which the celluloid was forced could reduce the pressure on the model?

Mr. Hutchinson admitted that he had been led into a fallacy on that point, but the three vents to which he had called attention were quite sufficient to prevent the pressure from being excessive.

Mr. Turner remarked that celluloid often showed a tendency to warp after it had been in use for some time; was this tendency diminished by Mr. Winderling's process?

The President answered that Mr. Winterling laid great stress on the importance of always keeping the plate moist. He advised that it should be kept in a metal case on a damp sponge, and that care should be taken never to allow it to get dry.

Mr. Oakley Coles said that in a paper he had read before the society about ten years ago, he had pointed out that celluloid behaved in this respect very much like bone. Alternate moistening and drying favored warping; but if the plate was kept in one state or the other but slight alteration in shape would occur.

Mr. Hutchinson showed a mouth mirror illuminated by the electric light, which had been designed by Messrs. Coxeter of Grafton-street; it was intended for use in dull or foggy weather. It was similar in some respects to that which had been brought forward by M. Trouve, of Paris, but differed from this in other important particulars. The battery was a "constant" one, producing a direct primary current of great quantity and intensity. No strong acids were used, the power being generated by the action of platinum and peroxide of manganese. The light was obtained in the same manner as Trouve's, by the incandescence of a short piece of platinum wire, but a rheostat was fixed in the handle by which the passage of the current could be regulated, and to prevent the fusing of the platinum. It would give a steady light for from 20 to 30 minutes. Messrs. Coxeter had also arranged a means of keeping the mirror cool, by passing a current of water round the back of it. The apparatus could also be used for cauterizing.

Mr. Coleman said it might be in the recollection of some of the older members that a similar apparatus was exhibited before the Society some years ago. The illumination was more powerful than that which Messrs. Coxeter were now showing, for it enabled one to see through the alveolar process so that the outlines of the fangs of the teeth were distinctly visible. He had not been able to find any notice of it in the Transactions, and could not then call to mind when or by whom it had been shown.

Mr. Robert Hepburn said that the apparatus spoken of by Mr. Coleman, was the invention of Mr. Hart, of Edinburgh, a very eminent practical electrician. He remembered its being exhibited about ten years ago, and Mr.

Coleman had not exaggerated its capabilities. It was a far more brilliant light than the present.

Mr. Oakley Coles said that M. Trouve's apparatus was intended primarily for use with the laryngoscope, and the great objection to it was that the platinum got melted occasionally by the intensity of the current, and the drops of fused metal falling on the vocal cords burnt holes in them. He was glad to see that in Messrs. Coxeter's apparatus this was guarded against, by enclosing the platinum in a glass tube. He knew that of late several individuals had been experimenting with the view of making the electric light available for mouth illumination, and he had no doubt their efforts would ultimately be successful.

Mr. Hutchinson showed a supernumerary tooth which he had removed from the mouth of a patient 13 or 14 years of age; it occupied the place of a permanent lateral. On examining it he found that the root was much expanded and filled with pus, and on washing this out he found what appeared to first sight to be a second tooth inside of it near the apex. The idea struck him that the missing permanent lateral had got shut up inside the supernumerary tooth, though it was difficult to imagine how such a thing would occur. But, on examining the specimen under the microscope, he found that what appeared to be a second tooth was an abnormal dipping down of the superficial enamel. The tooth, although at first simple, was really composed of two denticles, each with a separate pulp cavity. Similar cases were mentioned in Mr. Tome's work (p. 227, 1st ed.,) but they were stated to be very rare. Mr. Hutchinson desired to express his indebtedness to the curator for the assistance he had given in preparing and identifying the specimen.

Mr. Oakley Coles then showed, for Mr. Hatfield, of Old Burlington street, a large mass of salivary calculus which had been removed from the mouth of a lady about 70 years of age. Before removal it formed one mass, which almost covered three incisors, a canine, and a small bicuspid stump. It was supposed to have been in course of formation for about two years.

[TO BE CONTINUED.]

EDITORIAL, ETC.

In the Blood.—It is now some five years since Prof. Carl Heitzman announced his theory of what he deemed was an important discovery in respect to the "histology of protoplasm," claiming that this substance, no matter where found or however placed, invariably contained a net-work of threads and granules inclosing a fluid, the threads and granules being the living matter. Although not recognized in this country, Prof. H. asserts that this doctrine is accepted by more than a dozen of the best microscopists of England and the Continent. Of late he has come forward with an application of his theory, which, if substantiated, must have a controlling effect on differential diagnosis in the near future. Boldly he claims that a drop of blood or urine, under the microscope, will enable the microscopist to tell not only with what disease the patient is suffering, but will also enable the observer to determine whether the incipient disease is to be of slow or acute type—in a word, that the blood or urine will tell the secrets of a patient's constitution.

If it be true, as is claimed, that the pus-corpuscles of a healthy and strong person contain a greater amount of living matter than those of a person enfeebled by disease, and that the colorless corpuscles of the blood in health contain a large amount of these protoplasmic granules, and consequently an enfeebled person only a few, it would be a step largely forward. Whether its practical bearing will be as valuable as is predicted is a question. The best microscopists differ and wrangle. The work itself is a life-long one, and the probability seems that the mass of practicing physicians would not be at all able to utilize these discoveries, even were their authority acknowledged beyond dispute. Still, all such advances are eminently satisfactory, if only as establishing sound pathological theories; and if they do no other good, will at least tend to diminish irrational drugging.

It is worthy of mention that Prof. Heitzman in a discussion before the New York Odontological Society, in December last, announced as a theory that "inflamation in its first or earliest stage—its mildest degree—consists in a reduction of tissue to its medullary condition. H.

Don't Roll your Manuscripts; and other Don'ts.—Some say the editors of the country will form an association pledged to read no manuscripts that have been rolled up. The mail will carry a flat package just as well as a rolled one; and the vexation of reading paper which won't come unrolled is exceeding. We have plenty of other worries without this unnecessary one.

Don't write with a pencil. It rubs out, and saves the writer no time. If you *must* write with pencil, wet the sheets in water afterwards, and carefully dry. This helps to fix the marks, and prevents erasure from slight causes. But it is better to use a pen and—*write plainly.* Illegible manuscript is one of the reserved rights of editors, which correspondents and contributors must not infringe upon. The editing is done between times, and we practice dentistry, and need our eyes.

Don't be afraid to say what you have to say in plain words. Verbosity is a useless acquirement, and is in every body's way. Short, one, two, three page articles are almost always readable. Even half a page of *original* work is worth more than some small volumes we could name.

Don't hesitate because you cannot say just in the best way your "say." If you have ideas, they are what we want; what the profession wants; what every body wants. If your way of saying it is bad, we will try and mend the way by a "revision." That's one of the offices of the editors.

Don't fail to observe closely. Dentistry must progress. But of the thousands who are at work, most are men delvers, working for money. How many of you know for yourselves that saliva is alkaline, or acid, or anything? It is a mistake to suppose that all these things are to be left to the scientist. You realize very sensibly if you reflect at all, that so far, we are practicing a very imperfectly developed science. We belong to the world's army of "healers," and suffering mankind looks to us to palliate, cure, prevent This last, how important! Most

important of all! It may be a long way off, possibly even unattainable, but surely worth the striving for. A better filling material is wanted. It is surely not too much to say that chemistry can produce it, and it would be the shame of dentistry if it should come from outside the profession. There is plenty of work then. Don't rest content that you are stopping a few teeth and making artificial ones,—and money. H.

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Eyesight, and How to Care for It. By George C. Harlan, M. D., Surgeon to Wills' Eye Hospital, etc. Publishers: Lindsay & Blakiston, Philadelphia, 1879.

This small work, one of the series of the "American Health Primers," treats of a subject of the highest importance to the dental practitioner, and involves the sciences of anatomy, physiology and optics, as the intelligent care of the eyesight requires some knowledge, at least, of the structure and functions of the organ of vision. The author without claiming any originality, endeavors to popularize established facts and accepted theories and after treating of the anatomy and physiology of the eye, refers to the more common injuries and diseases of this organ, ending with some of the most valuable practical suggestions in regard to the care such important organs demand, with rules for their safe exercise in reading, &c. The effects of school-life upon the sight also receives notice, and much useful information is given which cannot fail to be serviceable to every one who may peruse it.

Students' Pocket Medical Lexicon, giving the Correct Pronunciation and Definition of all the Words and Terms in general use in Medicine and the Collateral Sciences, with an Appendix

containing a List of Poisons and their Antidotes ; Abbreviations used in Prescriptions, and a Metric Scale of Doses. By Elias Longley, author of "Pronouncing Vocabulary of Geographical and Personal Names, &c." Publishers: Lindsay and Blakiston, Philadelphia, 1879.

This work is compiled in a careful and exhaustive manner, and cannot fail to afford assistance to the student in the proper pronunciation of the officinal words and terms of the profession, the study of which he is commencing, and at a time, too, when a proper knowledge of this kind is so essential. The pronunciation is plainly represented in the "American Phonetic Alphabet," preceding the text proper, together with an explanation of the alphabet. The size of this lexicon is such that it can be readily carried in the pocket, and hence can be referred to on all occasions.

Medical Chemistry, including the outlines of Organic and Physiological Chemistry. By C. Gilbert Wheeler, Professor of Chemistry in the University of Chicago, etc. Publishers: Lindsay & Blakiston, Philadelphia, 1879.

This work is designed for the medical and dental students, and is of a size suitable for a text-book, and so arranged as far as convenience in method and form of expression are concerned, as to make it a comprehensive and useful treatise.

The author assumes that the study of inorganic chemistry has previously engaged the attention of students before entering college, or at least that they have become familiar with the general principles of modern chemical philosophy, and hence a estatement of the theory of chemistry is omitted.

Riche's, Manuel de Chimie, forms, in part, the basis of the outlines on Organic Chemistry, and the latest authors have been consulted in Prof. Wheeler's work. The centigrade thermometer and the metric system of weights and measures are generally employed throughout this treatise, and the dental tissues receive due notice. The style of the work reflects credit upon those veteran publishers of medical and dental literature, Messrs. Lindsay and Blakiston, and no doubt this effort to present a standard text-book in such a concise and perspicuous form will be duly appreciated.

A Guide to Surgical Diagnosis. By Christopher Heath, F. R. C. S., Prof. of Clinical Surgery in University College, London, etc. Publishers: Lindsay & Blakiston, Philadelphia, 1879.

The mere announcement of a work by this celebrated Surgeon is a sufficient recommendation of its value, and the present one is no exception to the rule, for his many years' experience as a clinical teacher, renders him authority on all such subjects. In the present work, which is a most useful one to the practitioner as well as to the student, the surgical affections are arranged anatomically, in order to assist the reader in obtaining a clue to the nature of such cases where the advantages of the presence of the patient may be absent. Without any attempt being made to discuss the pathology and treatment of any of the diseases described, yet the salient points receive due notice, and the differential diagnosis of affections likely to be confounded, is plainly pointed out. The work commences with "Heads for Report on Surgical Cases used in the University College Hospital, London, compiled by Mr. Godlee; and the text proper, with Affections of the Head." The Affections of the Mouth follow, including those of the lips, tongue, jaws, and gums. Affections of all the other parts of the body receive due notice in regular anatomical order, rendering this work an exceedingly useful one, in which a great deal of information is condensed into a small volume.

Vegetarianism the Radical Cure for Intemperance. By Harriet P. Fowler. Publishers: W. L. Holbrook & Co., New York, 1879.

The object of this work is to show that meat may lead to intemperance by its stimulating effects upon the nervous system and stomach, and by its want of carbonaceous properties.

The Phosphates in Nutrition, and the Mineral Theory of Consumption and Allied Wasting Diseases. By M. F. Anderson, M. D. Licentiate of Royal College of Physicians, Scotland. Publisher: Chas. H. Phillips, New York, 1879.

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ARTICLE I.

The Progress of Dentistry.

BY RICHARD GRADY, D. D. S.

It is comparatively of late years that dentistry has occupied any thing like a properly recognized position among the different departments of the healing art. In Rees' Cyclopedia, published early in the present century, we are told that the " head surgeons in London deem this branch of their art beneath notice, and generally decline interfering in it except by giving their advice occasionally: though manual operations on the teeth and the mechanical formation of these organs in cases of defect constitute a very profitable business in such a large metropolis; so that dentists are often known to get several thousand pounds per annum by their profession!! "

For a long time dentistry was practiced to a large extent as a superadded means of livelihood by persons engaged in other pursuits, and without any professional education whatever; and it is only within a century that it has taken the rank of a distinct profession. The blacksmith, the barber, the watchmaker, the shoemaker, were the dentists of

every village and country town. In 1803, the practice of making teeth and cleaning them appears to have been in the hands of silversmiths and jewelers. The explanation seems to be that mere tooth-drawing constituted the surgical dentistry of these days; and as the operation was considered one demanding muscular strength and manual dexterity more than anatomical knowledge and surgical skill, it had not many attractions for medical men, and was accordingly consigned to the uneducated and the charlatan.

Little knowledge appears to have existed in very early times concerning the causes of toothache, if we judge from a remark made by a physician in the first century, that "the cause of toothache was known only to God." However, it is claimed that the ancient Egyptians understood processes of the art of dentistry which are regarded as inventions of modern times, such as fastening artificial teeth on gold plates and filling teeth with gold and cement. But it is certain on the authority of Hippocrates (B. C. 450) that little was known concerning the anatomy, physiology and pathology of the teeth.

Galen, who flourished in the second century and next to Hippocrates, the most eminent of the ancient physicians, was the first to treat this subject; and his works were the best for a space of fourteen hundred years, or until the works of Fallopius, Eustachius and Pare were published.

From this time the treatment of diseases of the teeth received much attention. Indeed such attention was given to it that it was becoming a specialty; and prominent medical men in France and England published elaborate works devoted exclusively to dentistry. But as the writers were not practical dentists, the subject was treated theoretically. From the publication of the writings of these men, and prominently among them the treatises of Hunter, Bichat and Fauchard begins the most important epoch in the history of the rise and progress of dental science. The writings of Hunter, who was acknowledged

the first practical surgeon in Christendom, laid the foundation of the English School of Dentistry, and those of Bichat, the eminent French surgeon, that of the French School of Dentistry. The progress from this time was very rapid, works being published on the principles and practice of the art, and one on Mechanical Dentistry.

Dentistry is supposed to have been introduced into the United States by Le Mair, who came from France during the Revolutionary war; but it is stated on good authority that the first dentist of whom we have any account was Wooffendale, who came from England to New York in 1766. John Greenwood, who carved two sets of teeth for Gen. Washington, which were secured by spiral springs, is believed to have been the first "American" dentist.

In the first quarter of the present century there were, perhaps, 100 dental practitioners in the United States, some few with previous education, (as Spence, Gardette, Hayden and Koecker;) but others entirely deficient in theoretical or practical knowledge; and dental surgery had made but little progress. The dentists now in the United States number 10,500, while those in other countries combined do not exceed 4,100.

With this increase in the number of dental practitioners, the progress of dentistry as a science has been very marked and rapid; and many very valuable works of a practical nature have been published, which are but the signals and registers of its onward march. In fact, no science or art, except Chemistry, has been so eminently progressive.

But this growth and development have required time, thought and talent, as well as great resources and most skilled appliances. From the simple and comparatively not-difficult operations of cleansing, extracting and filling small and superficial cavities, it has extended to a thorough and scientific treatment of the mouth, with a view not only of saving teeth but slightly decayed, but all teeth, and also anticipating decay by such operations as shall make it possible for the patient to keep the mouth

thoroughly cleansed and the teeth free from the deleterious effects of fermentation of portions of food or other substances in the mouth.

It is no longer a question that dentistry is extremely useful and has done valuable service, since it is not too much to say that it adds not only to health, comfort and the enjoyment of life but in all probability many lives have been saved and a still greater number prolonged through the instrumentality of the aid afforded by the use of artificial teeth.

As with Hunter and Bichat began an important epoch in the progress of dental science in England and France, so the establishment of the American Journal of Dental Science in 1839, the formation of the Society of Dental Surgery and the founding of the Baltimore College of Dental Surgery shortly after, gave by their combined influence an impetus to dental science which it never before had, and contributed in an eminent degree, to the dignity and respectability of the profession.

There are perhaps now in existence not less than 230 National, State and Local Societies; 14 Colleges of Dental Surgery, established in the leading cities of the United States; and 8 journals devoted entirely to the interests of dentistry. And it is a matter of just pride and of memorable interest that America has the honor of nursing dentistry through its infant struggles, and that Baltimore is its birthplace, for in Baltimore was established the first institution that gave it reputation.

The mechanical branch of the science has conferred upon man the marvelous power of imitating in his laboratory the production of living nature. Formerly artificial teeth were carved from ivory. They were also obtained by altering the shape of teeth of inferior animals, and the crowns of human teeth were often conveniently engrafted on the roots of original front teeth. All these materials were objectionable from their susceptibility to the action of the fluids of the mouth. Porcelain teeth (known as "incorruptible") perfectly

resist this action. They are of French origin; but their present perfection is due to American enterprise. One establishment in Philadelphia, which has spared neither labor nor expense in securing, improving and perfecting artificial teeth by employing the most skillful talent, turns out nearly 4,000,000 teeth annually; about one-half of what are made in Europe and America.

Various methods of securing artificial teeth in their places have been in use. In ancient times, they were fastened by ligatures of flax or silk, and with wire of gold or silver to the natural teeth that remained. In modern times, metallic clasps, spiral springs and fastenings of gutta percha and caoutchouc have been used for this purpose. Another method is to secure the teeth, either in whole or partial sets, to a plate of gold or other metal, which is so accurately fitted to the gums that it is retained by atmospheric pressure.

In 1851, the process called Continuous Gum was patented by Dr. John Allen, but priority of invention was contested by Dr. Wm. H. Hunter. In this, a silicious compound, similar to that of which the teeth are made, but more fusible, is applied in the form of paste over the fastenings at the back of the teeth, and also to the front, so as to bury entirely the ends of the teeth, as the natural ones are buried in the gums. To withstand the high degree of heat requisite for baking this upon the plate, platinum is substituted for gold. Platinum has besides the advantage of forming at a high heat a close union with the silicious compound. The compositions used are empirical mixtures of pure silica and feldspar, with a suitable flux to produce a fusible compound possessing sufficient strength, hardness and permanency of character. This work can be easily repaired when broken, or alterations made when required by changes in the mouth.

For 100 years, physicians sought for agents by the use of which pain in surgical operations could be avoided; and chemical science at length furnished the inestimable boon

through an American dentist. As the suggestion was first made by an American dentist, so the first use of the suggestion was in dental operations. As is well known, the priority of the claim to the introduction of ether as an anæsthetic agent has been hotly contested between Dr. Wells, of Hartford, and Dr. Morton, of Boston. The anæsthetic effect of nitrous oxide was first suggested by Sir Humphrey Davy in 1776, and practically demonstrated by Dr. Horace Wells. Several years since Dr. Richardson introduced bi-chloride of methyline. Galvanism was first applied for dental anæsthesia in 1858 by Mr. Francis, a dentist of Philadelphia. Several instruments have also been invented for the application of freezing mixtures to the teeth preparatory to extraction; so that when we compare the present mode of extracting teeth with that formerly in vogue (even as late as 1830,) the progress that dentistry has made in this particular is not difficult to appreciate.

In the successful treatment of teeth when the nerve is exposed much progress has been made; and the efforts have been crowned with such a degree of success that there is reason to hope that the day is not distant when such teeth will be saved and their vitality and life-like appearance preserved.

The variety of instruments used in filling teeth is numberless, so far as excavators and ordinary pluggers are concerned. Automatic mallets, the electric mallet, dental engines with attachments used in the preparation of cavities and finishing fillings have come into use. The rubber dam, given to the profession by Dr. Barnum, as also steel clamps for holding it in place, is one of the most valuable acquisitions that the dentist has received.

It is the opinion of many fully-qualified dentists that there is no necessity for so many dental colleges or even dentists, and that the profession would be elevated and greater progress made if examining boards were established in the several states to prevent the designation "surgeon dentist" being applied, without discrimination, to qualified

and unqualified practitioners in this special branch; and this view is strengthened by the fact that not more than 2,500 of the 10,000 now practicing dentistry in the United States are graduates of Dental Colleges. But in the opinion of the writer the number of colleges or of dentists is not to be diminished by ceasing to organize colleges, or graduate dentists, but by establishing other colleges, based on better claims, with more extended and liberal curricula wisely planned and ably carried out, and with preliminary examinations (not as a matter of form, but as a test of general knowledge and mental capacity,) which like Aaron's rod shall swallow up the spurious.

Such colleges will exercise an influence on the dental profession and command the respect of kindred professions; and, in the end, the crude and immature material which fills this new profession will disappear under the teachings and example of eminent practitioners, and a more appreciative judgment of the public. It is only in this way that dentistry can be elevated above a mere mechanical trade. In fact, the profession itself must rise or fall as its practitioners rise or fall in their own scientific attainments. It is very recently that the liberal and educated men of the profession, with a view of making more efficient and useful practitioners who shall have some recommendation in addition to dexterity in the insertion of a filling, have taken an interest in the education of students; dentists, in the greater number of instances, being educated to proficiency in the mechanical rather than the surgical part of the profession. But perfect dentistry requires equal skill and education in both departments. And it is now considered essential that, inasmuch as disease of the teeth is not always a mere local affection, but may, and very generally does, arise from constitutional causes, the average dentist's education should embrace a thorough acquaintance with the anatomical and sympathetic relations of the organs of the mouth with all parts of the system; that he should understand that the welfare of the teeth is ultimately connected

with that of the general system, and that he should possess a knowledge of the diseases whose effects may reach these organs. And inasmuch as no two faces are precisely alike, but each has its individual features, the dentist should study the faces of his patients as the artist studies his picture, so that in supplying artificial dentures he may not mar the features he intended to adorn.

Medical men have objected to what they term "fractionally qualified" being made to appear on an equal footing with themselves. A full medical and surgical education was always deemed desirable by those best qualified to judge of it, but the obstacle has been the mechanical acquirement which dentistry required and which would have to be added to a surgeon's qualifications; an arrangement entailing a very protracted period of education. This however, is overcome in these days (at least in Baltimore,) by the dentist pursuing a medical course while in the practice of his profession; and it is likely that ere long practitioners devoting themselves to dental surgery will (like oculists and aurists or obstetricians, or other physicians or surgeons restricting themselves to or selecting one branch of practice in preference to another) be at the same time fully qualified medical men. "The physician, surgeon and dentist have necessarily many practical duties in common; but each has his clearly defined limitation of sphere, requiring specific direction of that general culture which all must possess." And it is now universally accepted that devotion to a specialty of medical art detracts nothing from the position which a man's education and talent entitle him to assume.

As medicine and surgery are combined in the practice of the majority of medical men, so dental surgery and mechanical dentistry are usually practiced together. The day when the dental surgeon and mechanical dentist, like the ophthalmic surgeon and optician, should occupy a separate sphere has not arrived, yet it is an admitted fact that one who works in a laboratory making casts, swaging plates, grinding teeth, soldering them to the plate and finally fin-

ishing the whole as neatly as a piece of jewelry work, cannot keep his hands in a condition to perform successfully the delicate manipulative operations required in treating the natural teeth. However, as competition necessitates and stimulates proficiency, more distinctly marked must this division become and the highest excellence in each department be developed.

With the wondrous steps that modern dentistry has taken, the increase in our experience of what can and what cannot be effected by operations, with a full appreciation of the great conservative powers of nature, it must be acknowledged that the faithful student who understands the proper use of medicines and who, being well versed in all the improvements of the day, can use a moderate degree of dexterity in manipulation has before him every incentive for encouragement and success.

The adage "knowledge is power" is emphatically true in the domain of dentistry. He who professes the specialty must possess a knowledge of the improvements, real or fancied, in his science to the very day of his death. He must know that operations which a few years since were deemed totally impracticable can be and are being successfully performed; and he must be able to state frankly and fairly to the patient the contingencies of his case and the result which he may have to expect from a comparison with others of a similar nature.

In thus recounting the many advances made by the dental profession, it may not be out of place to call attention to a few things that have impressed the writer in which there is room for "progress." To begin: the dentist is not just and generous to his brothers in the profession. Dentists are very prone, when called to look over the labors of another, to assume a grave air of shocked superiority and state that "if" such and such a thing had been done, other and better results would have been attained; that a gross violation of all the known principles of surgery has been exhibited and so on. Whereas it is utterly impossible in

the majority of cases, after the patient has received treatment, for one unacquainted with the circumstances and contingencies of the case to express any opinion whatsoever concerning it.

Again, there is a tacit acquiescence in all that a patient may say regarding the practice of a brother dentist, which, while it does not commit the listener, yet allows the dissatisfied patient to understand that he is certainly correct in his appreciation of the case. There are those who, as Pope forcibly says:

> "Damn with faint praise, assent with civil leer;
> And without sneering teach the rest to sneer;
> Willing to wound and yet afraid to strike;
> Just hint a fault and hesitate dislike."

This is the most cowardly and miserable kind of defamation. Far better, and far more honest, is the man who boldly speaks his mind than he who, fearing to commit himself, gives the patient further grounds for believing that he has been badly treated and ill-used. Among men of the same profession there is an unavoidable rivalry, so far as they become competitors for the same prize, but in competition there is nothing dishonorable while excellence alone obtains distinction and no advantage is sought by unfair means.

And finally, the laws of barter are applied to brain work and its products. The disastrous influence of this competition in price is fatal to all progress in the art or advancement in the science of dentistry, and is in fact undermining its very foundations. "Dentistry thus learned and thus practiced has no just claim to be called a profession: it has neither the liberality, generosity nor culture which men are accustomed to associate with professional life. The client cannot estimate the cost of his lawyer's pleading, nor can the patient know till long afterwards the full value of his physician's prescription. The conditions of honest barter are absent, for client and patient are alike dependent upon the integrity of the professional man; hence professional bargaining is dishonorable and inevitably leads to the rendering of a disreputable grade of service."

ARTICLE II.

[Continued from last Number.]

Transactions of the Odontological Society of Great Britain.

The President then called upon Mr. Arthur Underwood to read his paper

ON THE FUNCTIONS OF THE NERVES OF TASTE.

Mr. President and Gentlemen.—My interest has been aroused concerning the subject upon which I have the honour to address you to-night by a paper upon the question forwarded to me some months ago from Dublin.

The author, Dr. Nixon, after giving the particulars of a case of double facial paralysis, enters somewhat fully into the more recent opinions of physiologists upon the nerve supply of taste; and, having read his remarks with great interest myself, I thought some *resume* of the kind might prove interesting to this Society. Cases very similar to Dr. Nixon's are being constantly brought forward in the medical papers, and the conclusions to which they point appear in a more forcible light when the evidence is grouped than when it is isolated.

For a long time the almost universally acknowledged view of physiologists was that the sense of taste was conveyed to the cerebrum by the agency of two nerves—the glossopharyngeal and the lingual branch of the 5th pair—the former presiding over taste at the root of the tongue, the latter at the tip and sides. This opinion was supported by the apparently conclusive evidence that section of either nerve produced loss of taste in the region it supplied.

The actual result of the experiment was true. The deductions of the experimenters, as is often the case, have been since shown to be mistaken as far as the lingual was concerned. Since the question first became a matter of dispute the controversy has led to many and various opinions being alternately entertained, and then, as evidence accumulated, abandoned. I do not think there is perfect unanimity upon

the subject yet, but there is at least a growing inclination to adopt one view among a large section of physiologists.

I would premise that the title of the glossopharyngeal to supply the special sense to the root of the tongue never having been disputed I shall not allude to it, and my reference to the sense of taste in the future part of the paper will be understood to mean the sense in the antero-lateral portion of the tongue only.

During the discussion of the question certain important facts have been fully established.

1. Section of the lingual after the chorda tympani has joined it produces loss of common sensation and loss of taste.

2. Section of the lingual before the chorda tympani joins it produces loss of common sensation, but does not affect the sense of taste.

3. Section of the chordi tympani before it joins the lingual produces loss of taste, but does not affect common sensation.

Furthermore, the evidence of disease is that—

1. Complete paralysis of the 5th pair, including of course the lingual, affects sensation, but not taste. (*Vide* Dr. Althaus' case—*Trans. Med. Chi.* Vol. LII.)

2. Paralysis of the 7th pair (due to lesion in its interpetrosal course) affects the sense of taste, but not common sensation. (*Vide* Dr. McDonnell's case—*Trans. Med. Chi.*, Vol. LVIII.)

The evidence by which these facts have been established is so voluminous that it would be impossible to reproduce it here, but if any gentlemen would be interested to hear the particulars of the experiments in the cases of paralysis I shall be happy to quote some of them in my reply.

These facts point at once to one conclusion—that the theory that the lingual *per se* has any influence over the special sense of taste must be abandoned, it being clear that such influence is transmitted to it by the chorda tympani.

Whence, then, does the chorda tympani derive this power over a special sense?

That it has it before it leaves the 7th in the aqueduct of Sylvius is plain from the fact that lesion of that nerve in that situation, either by disease, as in Dr. McDonnell's and Dr. Nixon's case, or injury, as in the cases of Vizioli, Stick, or Lotzbeck, produces loss of taste.

It is equally evident that the 7th itself cannot communicate the power, for two reasons:

First, because the portia dura is a purely motor nerve, and could scarcely be accredited with a special sense.

Secondly, because central paralysis of the portio dura, or section of it nearer to its origin than the gangliform enlargement, does not affect the sense. (Austin Flint, Hughlings Jackson, Hermann.)

In the case of the 7th, as with the lingual, the chorda tympani is only a guest, and not an offspring.

The next step in tracing this influence back to its cerebral source was to discover by what channel the chorda tympani joined the 7th.

There are four routes by which it may do so.

1. *Via* the great superficial petrosal from Meckel's ganglion.

2. *Via* the lesser superficial petrosal from the otic ganglion.

3. *Via* the external superficial petrosal from the sympathetic plexus on the middle meningeal.

4. *Via* the "nervus anastomoticus" glossopharyngeal outside the stylomastoid foramen.

No. 3 may be dismissed at once, as being simply vasomotor from the sympathetic.

In cases 1 and 2, that is from Meckel's ganglion, or from the otic, we should again be referred to the 5th pair for the original source.

At this point I must allude to a series of experiments by Schiff, undertaken with a view of clearing up this point.

He divided the 2nd division of the 5th above Meckel's ganglion; then the branches going to Meckel's ganglion; then the great superficial petrosal nerve, and finally removed Meckel's ganglion altogether.

His conclusion was that some of the taste fibres at least left the cerebrum with the 5th pair, passing along the 2nd division to Meckel's ganglion, reaching the 7th from thence by the great superficial petrosal, and leaving it as chorda tympani.

In support of this view is the analogy of the horse, in which animal, as was shown by Professor Owen, the great superficial petrosal leaves the portio dura as chorda tympani without becoming incorporated with its fibres at all.

Yet this view has, I think, been shown to be incorrect, both by the experiments of man and of nature.

Vulpian and Prevost repeated Schiff's directions with different results, and showed that after ablation of Meckel's ganglion the sense of taste persisted. But, after all, dissections involving such extreme nicety are very liable to error. Again, it is difficult to be sure about the persistence or extent of the sense of taste in the lower animals, their power of communicating their impressions being necessarily limited; and valuable as experimental evidence is, evidence derived from the observation of the results of disease or accident upon the human subject is still more satisfactory and conclusive, not only because the dissections are more exact—the experiments, in fact, conducted with greater nicety, and with less implication of other nerves—but also because a human patient can give the observer a better account of his own sensations.

It is then to the results of disease that I now turn for further elucidation of the matter. The two cases I allude to are chosen from very many because of the very high authority upon which they rest, and because they are eminently typical and very conclusive.

In the 52nd volume of the *Med. Chi. Tr.*, Dr. Althaus quotes a case of complete loss of function of the whole of the 5th pair unaccompanied by any other lesion. The loss of common sensation over the front portion of the tongue was so complete that the organ was actually wounded by the teeth without the patient being conscious of the fact.

The sense of taste was quite unaffected, and this was demonstrated by a series of delicate and ingenious experiments, the details of which are given in the Transactions.

The second case is one cited by Dr. McDonnell, also in the *Med. Chi. Tr.* (Vol. LVIII.)

It is a case of paralysis of the 7th, or portio dura, due to disease of its interpetrosal portion. In this case, while common sensation over the front of the tongue was as keen as in the doctor himself or any of the surrounding students, the power of taste in that region was quite lost.

The paper by Dr. Nixon, of Dublin, to which I am indebted for much of the material of the present paper, contains the particulars of a similar case to Dr. McDonnell's.

These are types of numerous cases, all of which show that though the special sense undoubtedly leaves the portio dura by the chorda tympani, it does not reach it from Meckel's ganglion, or from any other part of the 5th pair.

Is there then any other source of influence to the facial besides Meckel's ganglion and the otic? I have already alluded to a communication from the glossopharyngeal reaching the facial outside the stylomastoid foramen, called the "nervus anastomoticus," but this is not the only communication the glossopharyngeal sends to the 7th.

The glossopharyngeal gives off a tympanic branch which communicates with both the greater and the lesser superficial petrosal nerves between their ganglia and their union with the facial. Here then is an influence reaching the facial by the petrosal nerves, which would obviously not be disturbed either by paralysis of the 5th pair or by the removal of Meckel's ganglion. Moreover, it is a significant fact that this influence is derived from a nerve (the glossopharyngeal) which has always been regarded as undoubtedly a special nerve of taste.

According to this view then the glossopharyngeal would preside over the whole sense of taste, both at the root and over the tip and sides of the tongue. And I must urge that it seems more in accordance with common sense to

refer this taste-sense to the empire of one nerve and not two.

It is more in accordance with analogy, as such a phenomenon as a special sense depending on two nerves is unparelleled in nature. Sight, hearing, smell, each has its nerve specially adapted to convey its special impressions to the sensorium. They are not apparently in need of assistance from a motor or a sensory nerve to carry out their function. Why should it not be the same in the case of taste?

Anatomy shows us an unbroken line of communication between the glossopharyngeal and the tip and sides of the tongue. To recapitulate the chain, it runs from the glossopharyngeal by the tympanic branch to the petrosal nerves to the facial, leaves the facial as chorda tympani, joins the lingual, and so to the tip and sides of the tongue.

Experimental dissection and disease both point, as I have endeavored to show, to the fact that if this line of communication be interrupted the sense of taste over that region is lost; that if the chain of communication be left intact no other dissections or injuries affect the sense.

Analogy would suggest that there is likely to be only one nerve of taste,

The title of the glossopharyngeal to be considered a special nerve of taste has never been disputed.

From the due consideration of these facts, I myself can have no hesitation in arriving at this conclusion, as far as the light thrown upon the subject warrants any conclusion, that the glossopharyngeal is the only nerve of taste, and that the 2nd and 3rd divisions of the 5th pair have as little to do with this sense as the 1st division has to do with the sense of sight.

Of course there are many minor difficulties to be cleared up, and I do not doubt that in advancing a view that, although sanctioned by Herman, Dr. McDonnell, Dr. Althaus and many others, can scarcely be said to be universally accepted, I lay myself open to questions I may not be able to answer, and arguments I cannot demolish. I think there is a very strong case for the glossopharyngeal, which will also take much to demolish it.

[TO BE CONTINUED.]

ARTICLE III.

[Continued from last Number.]

Proceedings of the Maryland and District of Columbia Dental Society.—Annual Meeting.

BALTIMORE, Wednesday, Sept. 3rd, 1879.

The President called the meeting to order at 11 A. M. The minutes of the previous meeting were read and adopted.

Dr. R. B. Winder nominated Dr. Samuel Johnson, of Baltimore, who was duly elected a member of the Association.

Miscellaneous business being called, Dr. Winder took the floor and said:—

Mr. President.—There has been a desire this morning to urge me to make some remarks, and call the attention of the Association to the present "three-fourths vote" system of the selection of members. I think it would be advisable to appoint a committee to report upon each candidate for membership, so that we can be more careful to know what we are doing. There has been some complaint that our present system is too loose; that men are allowed to get in here who are not fit to be members of this Association. By some it has been advised that a standing committee be appointed to investigate and report the fitness or unfitness of each candidate. I desire also to call the attention of the Association to another matter. Other States have been making a movement towards obtaining appropriate legislation for governing the practice of dentistry, and it is time we were making such a movement for our territory. If that subject is to come up all the gentlemen present can determine what is best to be done. Many States have taken actions in the past year. Of course no legislation could interfere with those already in practice.

In some States they require that a practitioner shall either pass an examination before a Board of Censors ap-

pointed by the State, or that he shall have gradnated at some dental school. This is not in accordance with my own view. A diploma does not show that its holder is qualified to meet whatever demands may be made upon him in his profession. My own views have always been that we should go to the bottom of the thing, and require of the practitioner, first a diploma, and then an examination. At the same time we must remember that in dealing with these things we are running ahead of the medical profession itself, because States generally do not require a diploma. If the masses are so careless where so much is at stake, they may consider that we are running ahead of this old profession. I should like to hear from our medical men. I should like to have them take the same step we are taking. It would be even better for the medical profession to take the advance, leaving ours, the junior profession to follow.

Dr. Volck in a few remarks confirmed the opinion of Prof. Winder.

Dr. Scott.—I regard this as a most important subject. It is but too true that the standard of graduation is deplorably low. It is but too true that diplomas may be had too readily. It has often been charged that they can be bought in the public market in certain of our cities. Hence I join with my friend, Prof. Winder, in any scheme which will promote the advancement of our professions. And I notice in the newspapers that in Virginia an effort was made to establish a board of examiners. A few years ago the same thing was attempted. They wanted to require a diploma and then an examination. That is what should be done. The dental profession may have the honor of inaugurating a system which tends somewhat to avert the evil, and that is to prevent those who lecture from examining the students for graduation. In conversation with Dr. Winder, I find he favors it very highly, and I thought something of that sort would tend to elevate the standard. The medical profession have done nothing, and it appears to me it is

getting from bad to worse. Fees even lower; some of them I understand, twenty-five dollars for the course; two sessions to graduate, one in the summer and one in the winter. When we form medical associations among ourselves, when we form dental associations, we can regulate the membership for ourselves so far as science is to be a basis and so far as individual qualification is to be a standard. Membership will be sought for. I do not agree with Dr. Winder that we should wait for the medical men. I want him to take the lead. His profession has taken the lead in one thing, now take it in another. Have the candidate not only a man in character, but demand that he shall be fit to pass an examination.

Prof. Winder offered a motion to the effect that the two subjects just discussed be passed for the present, and called up at the discretion of the President sometime during the day. The motion was carried.

On motion of Dr. Hunt the organization of the sections was made the special order at the evening session.

The amendment to the constitution abolishing the office of Corresponding Secretary, and transferring his duties to the Recording Secretary, proposed last year, was then adopted.

Dr. Wm. B. Ulrick, of Chester, Pa., was then on motion of Dr. Hunt, elected to honorary membership.

Dr. Ulrick being invited, took the floor and said:

Mr. President: Dr. Caldwell embarrasses me. I came here at his solicitation, not to speak, but to see the scope that an organization of this kind would take. I have been exceedingly interested—interested upon a subject that I have long had at heart. I am not ignorant of the fact that the great progress of dentistry has kept astride with the progress of medicine. I recognize myself the close intimacy with my own profession. I not only look upon it as collateral with that profession, but as more intimately connected with it than many of the votaries of my own profession recognize, or are prepared to recognize. Now I did not come here to

talk. I did not come here to make any suggestions that might guide you to a more elevated position. I came here to listen; but when the subject of an elevated standard of my own profession is up for discussion, it is not very troublesome to enlist me in it. The gentleman who sits before me made suggestions it seems to me in the proper direction. I do not believe that legislation can have much influence. I believe the matter rests in the hands of the members not only of the dental profession but of the medical profession. Elevate our own standard, but how shall we best do it? By organizations of this kind; by meeting and throwing together our combined information and elevating the standard. Making these organizations, or societies, worth seeking. The public soon recognizes the fact that the man who is willing to measure his ability is the man to tie to. And those who keep outside of the organizations, will be the first to be frowned upon. So you, gentlemen of the Dental Association of the State of Maryland and District of Columbia, will bring about a more elevated course of instruction in your profession. I make these random remarks; I have no conceited views upon the subject, but I feel that your presence here to-day, and the discussions that are to take place here must advance you, must bring you to the notice of tne general public, that are growing more and more discerning from our public schools. With my very best wishes for the Dental Association of Maryland and District of Columbia, and its individual members, I take my seat.

Reports of business committees being the next order, Dr. H. B. Noble, chairman of scholarship committee, offered the following report.

The committee appointed to report on scholarship, beg leave to offer the following as their report:

That in their opinion, it would be better that a competitive examination should be held, the one who is best qualified to receive the benefit.

H. B. Noble, *Chairman.*
M. W. Foster.

The difficulty seeming to be that there were only two members of the committee in attendance on the meeting, on motion the committee was filled by the appointment of a third temporary member, and the report was recommitted to the committee, with instructions that they should make the selection in such way as in their discretion was best.

The President appointed Dr. Donaldson to fill the vacancy temporarily.

Dr. Noble made the following report of the Treasury.

BALTIMORE, Sept. 3rd, 1879.

Treasurer Reports:

Deficit at last report, - - - - - -	$ 7.91
Paid to Reporter, Dr. H. M. Schooley, - -	25.00
	$32.91
Received from Dues and Assessments, -	$50.50
	32.91
Balance in Treasurer's hands, -	$17.59

Subject to printing bill of $118.00, and other expenses of the present session, leaving the Society over one hundred dollars in debt.

DR. HUNT.—I move that the report just heard be referred to the executive committee to report ways and means to meet the deficiency. Carried.

On motion of Dr. Winder, Dr. Scott's paper was passed.

On motion, section four was passed.

Section second being called, Dr. W. H. Atkinson, of New York, read the following paper:

Report of Section 2,—Histology and Microscopy.

W. H. ATKINSON, M. D. *Chairman.*

In accordance with instructions, I wrote the members of my section early in the season. Three replied, and four failed to notice the matter at all. Having been overborne with a multiplicity of responsibilities of a like character to our professional bodies, I have had little time or opportu-

nity to prepare such a paper as I should desire to present to this body as a truly scientific statement of just what I understand Histology and Microscopy to be. In the absence of assurance of any help in the way of partial or supplemental papers upon the subjects committed to our section, out of which to collate a condensed report embodying the work of the several members of the section, I have determined to offer the following lay-out as a sort of basal or foundational postulate from which to proceed in building the real body of histological knowledge only knowable by correct application of Microscopical love.

I have been for some time past a student of Universology under the personal instruction of Stephen Pearl Andrews, the discoverer and formulator of that new and wonderful science; and he does me the honor to say that I aid him by my greater familiarity with the details of several specialties, and adds that a certain similarity of mental appetite and pursuits creates an unusual degree of intellectual sympathy between us. I propose on this occasion, to take a very simple first-step towards initiating you into an understanding of how universological discovery is about to affect, and perhaps, entirely recast Histology, or Microscopical Anatomy, which as you are aware is at the bottom of our branch of science, which is dental surgery. Our method of arriving at results is this. Mr. Andrews, taking the lead, makes a provisional application of universological principles, in a sort of *a priori* way to the histological special field of knowledge, upon the basis of the prevalent views upon that subject. To this first projection I then add my criticism and my contribution from my own observations, and from my greater familiarity with the discoveries of Carl Heitzman, Louis Elsberg, F. C. W. Bœdecker, (here justly named,) and others, the most recent and competent investigators in this special fi ld. When then we have fully discussed a proposed conclusion, and arrived at unanimity as between us two, we consider the matter sufficiently settled to be presented for the consideration of the

learned world. But the learned world must be slow in condemning or fully approving, inasmuch as all that can be exhibited at once is but a brick or stone, to be wrought into place in the structure of an immense edifice. What I am about to show is then, merely a specimen brick.

After certain preliminary stages, the real beginning point of embryonal development, and so of the proper science of Embryology itself, is the differentiation of the embryonal pellicle into layers; and, as the extant authorities express the fact, into an external and an internal layer, recognizing a twofold division merely. From the outer layer or ectoderm the *dorsal plates* are said to arise which, closing in backwise around the locality of the spinal cord and brain, constitute that which Richard Owen named the "Neural" or "Nerve Cavity;" and from the internal layer or endoderm the *abdominal plates* arise, and closing in frontwise, there is formed what he named the "Hæmal" or "Blood Cavity."

Observe, in passing, that there is necessarily, or by the natural admixture of parts, a portion of blood in the nerve cavity, a portion of nerve substance in the blood cavity, and a portion of other matters neither nerve nor blood in both; and that, so, all such physiologically local discriminations are to be taken as limited by the universological principles of NERVE PREPONDERANCE or OVER-LAPPING and of PREDOMINANCE AND SUBDOMINANCE, by which universology carefully guards against misapprehension.

Following this idea of a twofold distribution of the materials, embryologists have proceeded to designate the mass-growths of the ectoderm and the endoderm; and to give a clear understanding of how they view this very important matter. I quote the following passages from the article in Johnson's Cyclopædia, on Embryology, by J. C. Dalton, one of the best and most recent *published* authorities. "The dorsal and abdominal plates as they grow thicker and more condensed, begin to show, in their substance, the distinction of the various tissues. The external integument

(the skin,) the tissue of the voluntary muscles, the cartilages and bones, the organs of special sense, the nerves of sensation and voluntary motion, and the white and gray matter of the brain and spinal cord, are thus formed in the substance of the growing material. All the organs and tissues just enumerated, notwithstanding their different functions, are closely related to each other in one respect; that is they are destined to bring the animal body, into relation with the external world by means of sensation, consciousness, volition, voluntary movement, and the mechanical reception and expulsion of nutritious or effete materials. They are accordingly known as the organs of animal life, and they are all formed from the original cells of the *external layer* of the blastodermic membrane.

"There is also, however, an internal layer of the blastodermic membrane; and from this layer are formed the alimentary canal and its glandular appendages, or the organs in which digestion, absorption, and secretion are to be carried on, and in which the muscular actions are involuntary and unconscious. They may, therefore, be regarded as 'the organs of vegetative life.'" * * * * "These are the general features of the development of the embryo in all vertebrated animals."

Without in any manner interfering with this twofold distribution; leaving it intact for all it is worth; and acknowledging its validity and importance as a preliminary and initiative form of discrimination, universology points out the fact that it is a somewhat jumbled and confused account of the matters in hand, and propounds the further—on proposition that it is not the two-fold, but the *three-fold* basis of discrimination which puts the keystone in the royal arch of construction, and furnishes the satisfactory and ultimate system.

The jumble in the two-fold arrangement appears in the fact that the outermost integument, the innermost nerve ganglia, and the intermediate bone system are thrown together in one class, while interstitial matters make the

other class; this appears by the fact that the dead, stone-like bony system is classed among the more highly vital "organs of animal life," etc. The three-fold arrangement which universology introduces, overlies, underlies, and embraces the two-fold arrangement, bringing order out of chaos. This is the specimen brick which I have referred to, and which I will now proceed to present. According to this conception the embryonal sheet separates really not merely into two, but into three layers, the middle one of which is *Neutral*, and as a mere *residuum* and least highly organized part constitutes the *really central portion* of the new being, considered as a fabric, consisting of cartilage, tendon, and bone—in a word the Osseous System. This intervenes with its own main structural embodiment, between the neural and the hæmal cavities, the so-called *centra* of the spinal column being its centre, whence it sends out spines backward and ribs (also spines) forward, closing around and enclosing the neural and hæmal cavities, respectively.

In the course of development, the neural cavity is so shrunken in size, throughout the whole length of the body except in the head, that the presiding energy seems to vaccillate between preserving the type idea of two cavities, and on the other hand, treating the whole as one cavity. It is in accordance with the theory of two cavities that the spinal cord is kept in its distinct canal throughout; but in all other respects, the whole barrel of the trunk is treated as a single cavity having appropriate contents and walls. The skin, therefore, envelopes the whole as one; while the bowel as *in*-skin occurs only in the one big cavity, along with the heart and the sympathetic nerve system; and finally, the muscle is distributed partly to the exterior and partly to the interior of this cavity.

It will now appear that we are authorized to place the bony system by itself, as the analogue of the MINERAL KINGDOM and to call its parts the organs of Mineral life in the same analogical sense as that in which physiologists

have so habitually spoken of the organs of Vegetative life and the organs of Animal life. In other words, the middle neutral plate developing into the osseous system reproduces and represents the Mineral Kingdom; the abdominal cavity with its digestory and circulatory apparatuses reproduces and represents the Vegetable Kingdom; and the neural cavity and its contents, backed by the general integuments (the exterior muscles and the skin,) reproduces and represents the Animal Kingdom,—all within the constitution and organization of the individual animal or human body; thus in a sense rounding out, and, as it were, merely initiating the grand universal system of analogy between the outer cosmical and the inner or individual world.

The terms Masculoidium or Nocturnium, applied to the neural cavity and contents, and the terms Femenoidium or Diurnium applied to the abdominal cavity and contents, glance merely at ulterior universological discriminations to which we cannot give our attention now. The interior bony system of the vertebrates hitherto was called neutrum, but must now be discriminated as endo-neutrum or the endo-skeleton, reserving the terms exo-neutrum and exo-skeleton for the outer skin and its armature.

On motion of Dr. Foster, the Society took a recess until half-past two.

After recess the President announced the paper on histology and microscopy open for discussion.

Dr. Winder.—Mr. President, we certainly should not let this paper pass without something being said about it. I have never been a histologist, but I recognize the fact that if you will take these diagrams and study them carefully it will give all a very clear conception of embryonal growth. He has given there a representation of all parts and the manner in which they are developed. It is a paper that deserves to go on record, and these diagrams are within the comprehension of any man who will look at them and think. They show there the typical form of man. You will find this same thing in each of the two sections

no matter which way you cut. This is very beautifully expressed in one of Huxley's works. It is the typical form of vertebrate life. When I lectured at the Maryland College on physiology, my very first lecture was commenced right there on the typical form of vertebrate life.

The second figure is original with Dr. Atkinson I presume. It is just an extension of the other, and carries the whole facts right to the mind of anyone desiring information. It is plain, simple, and intelligible.

Dr. Atkinson offered some remarks with illustrations on the black-board.

On motion the subject of Histology and Microscopy was passed.

Dr. Hunt, Chairman of Section sixth,—Metallurgy and Chemistry of Metals—read the following paper:

The section having charge of "Metallurgy and Chemistry of the Metals" respectfully report, that owing to a combination of circumstances during the past year, the section has been able to do little more than examine the field of its labor and map out its work for the future.

It is the desire of the Section to pursue its researches systematically and carefully, and to present to the Association only the processes and results of such careful and thorough investigation.

To mark out more definitely the work to be done, it is intended to give to the term "Metallurgy" its most extended signification, so as to embrace the workings and behavior of metals, both singly and in all combinations with each other, so far as they are applied or are proposed to be applied to the practice of our profession. This refers only to their metallic state, as in alloys, amalgams, etc. The study of the "chemistry of the metals" will consider their relations and behaviour when their states have undergone a chemical change, as in chlorides, oxides, etc.

Most of the work hitherto done in the way of using metals for the purposes of our profession has been empirical rather than scientific. But it is understood that the investigation of this subject is now being conducted in a

scientific and practical manner by the "New Departure Corps." Our section will doubtless receive valuable assistance from that quarter, and will cheerfully co-operate with them and all others working in that direction.

In pursuing our work we will necessarily trench somewhat on the domain of "Operative Dentistry," but in doing so it will be our endeavor only to act as an auxiliary to the section on that subject, and we will most probably communicate to its Chairman from time to time any conclusions or results at which we may have arrived, coming naturally within its province.

The section desires to present at this time to the Association three conclusions:

1.—That pure gold introduced into a tooth as a filling is inert and *of itself* exercises no electric or galvanic action on the tooth.

2.—That while amalgam fillings conform to the general shape of the cavities, the surfaces of the fillings do not fit closely to the surfaces of the cavities, but are rough and uneven or indented, the indented or depressed portions not coming in contact with the dentine, thus being liable to leak, and in fact a very large number do leak.

3.—That plastic fillings into the composition of which chlorine enters, cannot be relied upon as permanent; first, because of the great affinity of chlorine for alkalies. second, because the other constituents of the filling have greater affinity for other acidulous agents than for chlorine, —these affinities bringing about a disintegration of the filling.

On motion of Prof. Winder, the report of Sec. VII was passed for the time.

Dr. Winder.—As Chairman of Executive Committee, I report that we find that an additional assessment of two dollars from each member will re.ieve us of our financial embarrassment, provided that the American Journal of Dental Science will print our proceedings instead of printing them ourselves. Report adopted.

Adjourned until 8 P. M.

ARTICLE IV.

Lecture on the Morphology of the Blood in Syphilis.

BY EPHRAIM CUTTER, M. D., BOSTON.

Delivered before the Maryland and District of Columbia Dental Association, September, 1878.

The word "Morphology; Morphos—Form and Logos—Discourse; is applied to the ideal forms of the parts or organs in the structure of plants and animals—their varieties, homologies and metamorphoses." There seems to be no good reason why in so real a matter as our subject, the ideal use of this term should not be extended to its practical employment in order to denote the description of the forms or substances found in the blood and tissues of persons suffering hereditarily or by inoculation with syphilis. We define blood as a fluid found in the vascular system of the human body of a very complex constitution, which we will divide into

1.—Fluid or plasma.

2.—White corpuscles.

3.—Colored corpuscles.

4.—Foreign substances that possess morphological characters.

Position of the writer; after more than ten years experience he comes as a witness—not as the discoverer—not polemically, but as sincerely believing that what he states is true and valuable to the medical profession. Ridicule or even contempt cannot annul history. I do not say that I make no mistakes, but I will not apologise for acting up to my convictions of duty.

In the *American Journal of Medical Science* for January, 1868, appeared a description of two new algoid vegetations, one of which appears to be the specific cause of syphilis, etc., by Dr. J. H. Salisbury, M. D. *Chief points*—Syphilis first attacks the connective tissue at the point of inoculation and next the lymphatic glands, after the

primary sore or sores have healed. The specific cause may remain apparently dormant in the system for a period varying from a few days to months and even years; it then becomes evidenced by blotches and hard swellings in the periosteum. Secondary: Thence it may spread its lesion to bone and cartilage "Tertiary." The author asserts that his results have been arrived at by long continued, patient and careful labor, and that it is possible that he over estimates his results. He began to figure and describe every new body and circumstance in Micrology in 1849. Eleven years he examined the pus from chancres and made no progress. The only thing he found foreign were small copper colored minute globular bodies. But on dissecting out the bed of chancres, filaments running in all directions were soon discovered. Up to 1868 one hundred primary sores had uniformly showed this vegetation. He discovered this vegetation in the blood wherever the disease had become constitutional. On its presence or absence in the blood he has based a sure guide for treatment, judging from his practical experience. He says: "Under favorable states of the system the tendency seems to be for the vegetation to gradually lessen, and probably in some few instances it may eventually disappear entirely. It may be transmitted during the secondary and tertiary stages under the proper conditions without producing the primary disease. I have noticed many instances in which the father, having had the disease previous to marriage and when the poison was not entirely eliminated, even though no outward manifestations of the disease had shown itself after marriage; this vegetation was transmitted to, and found in the blood of the wife and children many years after. In many cases of this kind this vegetation produces no visible impression upon the systems to which it is transfered, while upon others it produces more or less marked constitutional disturbance."

The following is a condensed description of the vegetation: Genus crypta—Minute, transparent, highly refractive,

copper colored algoid filaments, which develope in living tissues from spores. Crypta syphilitica—Salisbury—a homogeneous filament with extremities obtusely rounded. The filaments are of such uniform structure throughout that no trace of transverse markings are visible save in their early stage of development. Neither can the contents be distinguished from the outside wall. The filaments are either straight, coiled, or arranged in curves; develope from spores active or inactive in the connective tissue, and may be transplanted from one individual to another by inoculation or by contact with mucous membranes. They are believed to produce the disease named syphilis.

History of this the contribution. It has been received with a total denial by some, while others have verified the observations and found them of great practical value. Among the latter I come. Lorstofer made some announcements about a syphilitic corpuscle found in the blood. But this was subsequent to 1868. His theory was not accepted. In my opinion he only had half the truth. Other diseases have enlarged white corpuscles. Salisbury pointed this out before he gave the name of Zymotosis Regularis to a vegetation he discovered in healthy blood (Microscopic Examinations of Blood, Moorehead, Bond & Co., N. Y., page 32.) Lostofer's method was open to the objection that the blood was to be kept sometime and a vegetation developed therefrom.

Salisbury's method depends on getting the blood from the capillaries as soon as possible, since the spores are perishable. Lorstofer does not allude to the copper color of the spores, inside of the white corpuscles, nor to the filaments in the blood and peripheral margins of chancres; nor to the copper colored spores in the pus; nor to the differential diagnosis from other diseases. Lorstofer was correct in the fact that the white corpuscles are enlarged in syphilis, but he should have insisted upon the copper colored spores contained within as a distinctive mark. The difficulty is that he did not take in the full scope of the

biology of the vegetation. He deserves credit for the work he did and for opening up the field in the manner he did, though it was partially done.

The Salisbury position.—He finds in the blood of syphilis algoid forms of vegetable life, composed of copper colored spores and filaments with obtusely rounded ends. He finds them in the blood of parents, and in the blood of their children; thus showing a palpable hereditary taint. He finds the spores and filaments in the primary sores, and on the infected mucous surfaces. "It is possible that I overestimate what I have found, but I believe them to produce the disease called syphilis. Time and careful investigation can only determine the truth." This is not boastful language.

Before proceeding further, let us ask what are algae and what is algoid? Algae are plants that include the sea-weed and many fresh water plants. Pull in a Devil's Apron string from the beach and you have an algæ. Pick out a stone from a fresh water pool covered with green filaments and you have algæ. It may be the common œdogonium or spirogyra. There are over 12,000 species of algæ. Algæ are characterized by the production of oxygen gas from the carbonic acid gas found in the media in which they grow. They contain also chlorophyll and starch and protoplasm. They are parasitic on the human body. The *sarcina ventriculi* of Goodsir is an algæ. I have found it in the waters of Fresh Pond, Cambridge, Mass.; in the Cochituate, Boston; and Prof. Reinsch found it in the waters of the Lagoon between the steamboat landings at Oak Bluffs. Algæ have been found by Dr. Salisbury and by myself in the spleen of the Turtle. This vegetation was probably harmless. Algoid—like algæ.

To make this subject clear, we ask: What is a fungus?

Medicines sometimes grow mouldy and present flocks of matter floating in the substance of the liquid; these are fung. Under a 1-5th inch objective and an eyepiece it appears made up of threads or filaments called fungus or

mycelial filaments. (Mukos meaning mushroom.) These mycelial filaments form the thallus or frond of the mushroom, corresponding to the trunk of trees; the other parts of the fungus is its fruit. This varies in form. In the yeast it is made up of large obovoid or globar compound bodies that seem ready to burst, and in fact do burst, discharging their contents—the spores—and scattering them about like seeds, when are ready for development if a suitable nidus be found to lie inactive waiting for favorable circumstances. The large bodies are called sporangia or spore cases. Fungi give off carbonic acid gas, have no starch, no chlorophyll, are protoplasmic. *Algæ* have the power of independent motions. There is one family called oscillatoriaceæ, as they oscillate backward and forward like the tail of an enraged cat. Sometimes advancing forwards and then going backwards—creeping like a worm. Bacterium and Vibriones form Genera in this family. 8000 species of fungi are described.

It is germain to ask to what extent do parasitic vegetations exist in the world? Prof. Reinsch answers this question as follows:

LIST OF PARASITIC VEGETATIONS.

[A.]—Entophytic in the parenchyma of other plants,—*Algae* melanospermæ, Black Sea Weeds, Entonema, New Genus, Ectocarpeorum. All found in the thallus or frond of nearly all larger Floridae.

[B.]—Rhodospermæ, (Floridæ,) Red Seaweeds, Choreocolax, Entocolax, Syringocolax, fructification outside the infected plants arising from a stroma like hypo-thallus. Compare Reinsch's contributiones ad algologiam etc., illustrated in 12 plates. Found in the thallus of many other Floridæ, Polysiphonia, Plocanium, Alsidium, Hypnea, Ceramium, etc.

[C.]—Chlorospermeæ, Chroolepus and Muscicola, Reinsch contributiones, both in intercellular spaces and in cells of the leaves of Jungermania.

[D.]—Phycochromophycaceæ Algae, Nostoc and Polycoc

cus in the Parenchyma of Liverwort, Marchantia and Conocephalus Scytonema observed in the Parenchyma of green house plants in the Botanical Institution of Leipsic. The filaments of Scytonema growing through the Stomata and expanding on the surface of the epidermis.

[E.]—Fung. Many of the Hyphomycetes and Coniomycetes. The Stroma of Potatoe Fungus. Grape Fungus. Mildew. Eryside Sper on the leaves and stems of Leguminosæ Gramineæ, etc.

[F.]—Saprolegniæ.

Several new Genera belonging to Chytridiaceæ inside the cells of Desmids consuming the whole contents of cells and killing them. New Genus of Chrytridiaceæ, forming three different cells. Male and female cells inside the Utricle of Saprolegnia. Very probably belong to the so-called "Asterospheres" observed in cells of nitella and Charsa.

EPIPHYTIC ON THE SURFACE OF OTHER PLANTS.

Melanospermæ and Rhodospermæ—more than 2000 species—most of those figured in the contribution are epiphytic. Chlorospermæ nearly 50 species.

VEGETABLE PARASITES GROWING ON ANIMALS.

[1.]—Plants living inside the organs. Leptothricæ and Fungoid filaments in blood—excretion of ears—Vibrionidæ, Globular Bacteria in urine.

[2.]—Algæ living on the surface of the animal body.

[A.]—Phycochromaceous Algæ.

Polycoccus and Micrococcus, skin disease caused by chignon. Rabela Algæ. European. Leptothrix in mouth.

[B.]—Saprolegniæ, Protoplasmic plants, Synchytrium, Allochytrium, Genus Novum, Reinsch. Achlya, Rhizogartes, Entocellular Saprolegniæ in desmids.

ARE ALL PARASITES NOCUOUS?

It would be a work of supererogation to ask this question were it not that the impression is abroad in the profession that allowing the existence of this algoid vegetation

of Salisbury's it is harmless, as there are so many known vegetable parasites dwelling in and on their hosts as peaceful and advantageous guests. In reply to this question we say that while some parasites as the leptothrix buccalis for example are innocuous, there are some that victimize their hosts. Witness the muscardium on silk worms. The Botrytis infestans on potatoes. The puccinia on trees. The oidium on grape vines. Moreover this method of reasoning entirely ignores the facts of history in relation to poisoning people by eating mushrooms that are fungi.

Mr. Julius A. Palmer, Jr., of Boston, has made a study of edible and inedible fungi. He has collected accounts of sickness and death from eating fungi. It is to be hoped that he will be induced to give the profession the benefit of his studies.

We do not so reason in relation to trees and shrubs; because many fruits are innocuous, all are not. As huckleberries are wholesome it does not follow that all berries are. All things are classed as good or bad. It is idle then to reject Dr. Salisbury's contribution on the ground of the harmlessness of some parasitic vegetations.

Does the presence of these morphological elements remain in the blood during apparent good health? Yes it may. They may constitute a hereditary taint. Usually they disappear from the blood (pari passu) as the health improves.

How is the blood examined by the Salisbury plan?

Every thing depends on the proper method. The aim is to obtain the blood almost exactly as it is in the vascular system. This requires expedition and cleanliness.

[1.]—Things to be had. [A.]—The patient. [B.]—A lancet or scarificator. [C.]—A clean glass slide or an covered glass. [D.]—A positively good 1-5th inch objective and two inch eyepiece. [E.]—A good illuminator, Perkins & House safety lamp is the best I know of.

[2.]—Things to avoid. [A.]—Foreign substances, as dirt, etc., from the skin. [B.]—Too much blood. [C.]—Too

little. The drop of blood should completely fill the space between the cover and slide and no more.

[3.]—Place of selection for the purpose of drawing blood: fore-arm, above the wrist.

[4.]—Time, patience, practice, expedition, careful observation is necessary.

[5.]—The observer should first learn how to distinguish white corpuscles from the red, and should study the forms and peculiarities of vegetations that are found on the body and about the body.

[6.]—A year of careful investigation will do more towards understanding this matter than any amount of writing or theorizing; that is, taking known syphilitics and examining their blood and chancres.

Position of the writer.—He testifies that the positions of Dr. Salisbury are verified, by st·dies that have ranged over ten years, and been prosecuted in private practice and in the following Hospitals: 1.—U. S. Naval, Brooklyn. 2.—U. S. Chelsea. 3.—State Almshouse, Tewksbury Mass. 4.—Bellevue, N. Y.

That he has found in syphilitic blood and in the beds of chancres, the copper-colored spores and filaments; enlarged white corpuscles in which the copper-colored spores have been detected, and also that he has been able to photograph these appearances with the highest power objectives, to wit: the 1–75th of Tolles, belonging to Dr. G. B. Harriman, dentist, of Boston, to whom the writer acknowledges his indebtedness for aid and the use of this instrument.

ILLUSTRATIONS.

The following Microphotographs were projected with a Marcy's Sciopticon. Owing to the great expense attendant on such a course we cannot publish the illustrations.—EDS.

SERIES 1.

An answer to the question what is a fungus?

Illustration 1.—Photograph of the apparatus. See *American Journal Sciences and Art*, August, 1879. Consisting

[A.] of a one inch base-board, 55 by 11 inches. [B.] A mirror about 1 foot square, mounted like a compass. [C.] A mounted Voigtlander's 18 inch focus camera objective 3½ inches in diameter. [D.] A first class Tolles. A stand with objectives to be named; no eyepiece; tube horizontal and opening into a camera whose plate was usually 30 inches from the object. The apparatus is simple, portable, and has been used at different stations. It is a modification of Dr. Woodward's apparatus. Acknowledgements of indebtedness have been made to him who, the speaker termed, "the father of modern microphotography." Allusion was made to a much simpler form of camera the writer had devised to be used with any microscope, as his contribution towards aiding the art.

[2.]—Microphotograph of the common yeast plant: 1–50th of an inch objective; 1300 diameters on the plate. This was to show the physical features of a fungus which mankind had known from time to time immemorial as of domestic importance and as the one fungus that had been studied more than any other fungus for the past 25 years. The illustration showed two sporangia of the Torula Cerevisiae; with their contained spores; protoplasm, and formed cell wall.

[3.] and [4.]—do.; 1–50th. Yeast and Barley Starch Grains. The interspaces displayed spores which, when photographed, were in protoplasmic motions, and caused blurred outlines. Some botanists say these spores have naught to do with the yeast; but belong to another fungus. While others say, they have seen the sporangia burst and discharge the same spores. The first call the spores bacteria.

[5.]—Showed the variations in the form of the sporangia.

[6.] and [7.]—Yeast plant enormously enlarged from a 1–50th objective. They show the apparently empty spaces common in white blood corpuscles and other protoplasmic bodies.

[8.] and [9.]—Starch grain apparently 1–3rd consumed in the act of being converted into alcohol, etc.

[10.]—Seven yeast plants photographed with the 1–75th objective. It shows more details of structure than the others did.

[11.]—Mitscherlich's drawing, showing the increase of yeast by budding. This process is doubted by some Botanists. It is difficult to explain this difference of opinion as to matters of fact; if such is the case when biological phenomena are patent and open to the eye, shall we wonder that honest differences shall also exist when the facts are occult and obscure?

[12.] and [13.]—1–5th objective. Filaments from the surface of yeast that had become mouldy. They are called mycelial from mukos, mushroom. Some say they have nothing to do with the yeast plants, others declare they come from the yeast. Still they are examples of the part that is analagous to the trunk of phanerogams.

[14.]—1–10th 4 system Tolles objective. Sewer-gas fermentation vegetation. A contribution to the physical demonstration of what may be nocous in the atmosphere of sewers.

[15.]—Vegetation found in rancid butter. A fungus growing in the parenchyma of an organic animal substance of far greater density than the blood.

[16.]—Diphtheritic membrane from the uvula of the daughter of the speaker, who died July 1st, 1874; kept in strongest carbolic acid till January, 1878. A portion thrown up with the helio-microscope showed multitudes of spores and filaments in active motion.

[17.]—Vaccine virus.

Algae form another class of parasitic plants.

[18.]—Leptothrix buccalis. Innocent.

[19.]—An algae found growing in the substance of a Key West sea weed. Innocent. 1–5th objective. From Prof. Reinsch.

[20.]—Desmid from Cochituate water; 1–800 inch long. Inside a curious development which Prof. Reinsch says is a growth resembling those found by Dr. Salisbury in the white blood corpuscles of syphilitic blood.

[21.]—Plate from Prof. Reinsch, showing many algae parasitic in other algae, but nocent and killing their host. These show that Salisbury had authority to sustain his positions.

DIVISION 2.

To answer the question, "What is the morphology of healthy blood."

1.—Human blood. 2.—Rat. 3.—Ox. 4.—Horse 5—Dog. 6.—Sheep. 7.—Trout. 8.—Frog. Taken with the 1-50th objective; at the same distance. Interesting in a medical point of view, and support the dicta of Woodward that no life should be taken on blood evidence alone. 9.—Human, 1-75 inch. 10.—Bluebird's blood, 1-16th inch objective. 11.—An example of healthy blood, outlines clear and clean cut; segregation distinct; interspaces clear and free from foreign substances. 12.—Healthy white corpuscle; 1-50th; no appearance of ento-phytal growths.

SERIES 3.

Morphology of syphilitic blood:

1.—Spore and spore collects; in the original they were copper colored.

2.—Do. with some fat globules from the areolar tissue of the skin.

3.—Four white corpuscles, enormous in size; distended with ento-phytal growths, called the syphilitic vegetation.

4.—1-50th, white corpuscle with marked ento-phytal growths; spores and red corpuscles.

5.—1-75th inch objective; white corpuscle with inside growths, one spore very much enlarged.

6.—Same objective, white corpuscle in which are several spores that were copper colored in the original.

7 and 8.—Two enlarged and over-distended white corpuscles with peculiar phases that cannot well be described.

9.—1-50th, white corpuscle which Prof. Reinsch declared morphologically identical with some ento-phyte he had discovered in algæ and described in a work published in

Germany. Later he wrote: "I see as botanist in this diseased blood nothing but a peculiar case of ento-cellular vegetable parasitism." Prof. Reinsch is the leading agologist in the world. His utterances sustain Dr. Salisbury.

10.—Algoid filament in syphilitic blood.

11.—A bent, obtusely ended filament, the bluntness is marked.

12.—Another.

13.—For comparison, spores of the pre-tubercular state usually present one year before the organic lung disease; not copper colored in the original.

14.—Mycelial filament; consumptive blood.

15.—1-75th objective. Three white corpuscles distended and enlarged by ento-phytal growths. These were introduced to show that there are other complaints in which there are spores--filaments and enlarged corpuscles—but that the copper color is the distinguishing characteristic of syphilis.

SERIES 4.

1. Hair in blood. 2. Cotton fiber. 3. Dust from furniture. 4. Dust from the skin of a patient. 5. Lard. 6. Soap. These may be sources of error.

Resume. Dr. Salisbury believes the peculiar contagion of syphilis to consist in a cryptogamic vegetation he calls crypta syphilitica he finds in the blood in chancres and in the mucous membranes of syphilides, and gives drawings of the same.

Second, the speaker has verified this discovery by ten years experience.

Third, he endeavors to give the evidence. A. By showing what is the morphology of a fungus. B. Of an algae. C. Of healthy blood. D. Of syphilitic blood. E. Of consumptive blood. F. Sources of error.

In these demonstrations he has shown microphotographs never before taken and has used the best instruments of precision known to modern art.

EDITORIAL, ETC.

Terrible Case of Arsenical Poison.—One of the most unfortunate and tragical terminations of the possibly careless use of arsenious acid in a tooth, occurred a few days ago in Brooklyn, N. Y., full accounts of which were published in the daily papers. It sounds almost like an impossible story that even the careless use of this substance could cause the results thus reported.

"Mr. George Arthur Gardner, nephew by marriage of Prescott, the historian, died in Brooklyn on the 27th ult., in great agony, after two weeks of indescribable suffering. It is said by his attending physician that his death was caused by arsenical poison placed by a dentist in one of his teeth for the purpose of killing an aching nerve. The certificate of death, which was filed by Dr. Samuel S. Guy, states that the cause of death was "gangrene of mouth and face, arising from treatment of a tooth." Mr. Gardner was nearly fifty years old, a married man, and by occupation a civil engineer. His illness began two weeks before his death, his tooth first having been treated by a Boston dentist, and afterwards by a Brooklyn dentist. Mr. A. C. Lewis, a friend of the deceased, who was with him during his last illness, said: "No man ever died such a terrible death as Gardner died. When he was dead every connection between his head and body, except the spine, had been eaten through and completely severed by the action of the poison. Every time a blood-vessel was severed there would be a new hemorrhage. A few days before he died one of these hemorrhages suddenly occurred, and the blood spouted up into the attendant's face. The sloughing of the decayed parts was so great that four incisions had to be made into his neck to keep his throat clear. Through these incisions we had continually to draw out the sloughed parts, and they came in long strips like soft gum, and had to be broken off. I suppose if he could have done so he would have killed himself rather than remain so offensive. He was dying while alive all the time."

A correspondent of a Boston paper, who interviewed Dr. Waters, reports him as stating that Mr. Gardner came to his office in Boston on Tuesday afternoon, September 9th, and complained of a severe toothache. Mr. Gardner said that a dentist had examined the tooth and had put in an application, which, however, had had but little effect, as the aching had been stopped but temporarily. Dr. Waters said that he examined Mr. Gardner's tooth and found that the aching member was the first molar in the right lower jaw. Mr. Gardner requested Dr. Waters to stop the pain and plug the tooth, and the latter did so. He found the tooth very badly decayed. He washed out the cavity with a solution of carbolic acid to remove the decayed matter and food which had settled in the tooth, applied nitrate of silver to the nerve and then plugged the tooth with gutta-percha to keep out the air and food. After the operation he advised Mr. Gardner to see another dentist in a few days, after his return to Brooklyn, N. Y., in order that the tooth might be permanently filled, and to call again and see him (Dr. Waters) on his next visit to Boston. "Mr. Gardner," Dr. Waters said, "was naturally very robust, and was the picture of health, but he did not appear to be as well as usual when he visited me." Dr. Waters, said Mr. Gardner complained of not feeling well when he left his office." Dr. Waters did not hear anything of him again until a week afterwards, when he was informed that he had been prostrated with what was stated to be arsenical poison, used in filling the tooth. Dr. Waters said that he had also been informed that Mr. Gardner had been treated by Dr. Marvin, a dentist of Brooklyn, N. Y. He heard nothing further until Saturday evening, September 27th, when Mr. Joseph B. Gardner, a brother of the deceased, called on him and stated that George had died. Dr. Waters said that he used no arsenic, nor any preparation containing arsenic in treating Mr. Gardner's tooth. He never used arsenic in his profession, but knew that some dentists used the poison. He said that he should not be surprised if the dentist who had performed the first operation on the tooth, as stated by Mr. Gardner, when he visited Dr. Waters in Boston, had used arsenic, and that Mr. Gardner's complaint of poor health was due probably to the poison which at that time had been absorbed.

Supply—Demand.—The Editor of the New York *Medical Record* sharply says in an article on "the overcrowded profession" that "where there are a few Medical Colleges in a State, they supply a demand; where there are many, they demand a supply; get it by superior inducements in the line of economy to the student of time and money." and Prof. Alfred Mercer, in an interesting address recently made to the council of the Syracuse (N. Y.) University, very pertinently says:

"From the cheapness of American diplomas, and from the few unenforced legal restrictions on the practice of medicine, with or without a diploma, or any known qualifications whatever, we have one doctor to every six hundred inhabitants, while a few miles from here, just over the Canadian border, they have only one to 1,200 inhabitants, while in Great Britain there is but one to 1,672.

France has one to	1,814
Germany " "	3,000
Belgium " "	2,048
Austria " "	2,500
Italy " "	3,500
Norway " "	3,480

Thus, we have two doctors in the United States to one in Canada, nearly three to one in Great Britain, more than four to one in France, and five to one in Germany. The just relative proportion of doctors to population has been variously estimated at from fifteen to twenty-five hundred. The present average of the civilized world would probably fall within these limits."

It is perhaps a nice question to decide *when* a profession is crowded, but that that of medicine is getting so very rapidly is obvious; and in proportion as the wedging in process goes on, and the question becomes one of daily bread; practitioners may not hope for any courteous treatment from each other. Dentistry may well take warning from medicine—dentistry which is more exposed to attack from the more nearly mechanical nature of most of its work, take warning and reflect on the tendencies of the times. It is probable, nay, certain, that of the most of those practising in the large cities, not greater pecuniary success is achieved in dentistry than in most of the callings in life; the masses eke out a a precarious livelihood, perish and leave no mark or name. Is this on account of inherent faults in the system by which these practitioners are put into the field of competition with those already struggling with difficulties, or is

it that there are always too many seeking a livelihood in this direction? or is it that in spite of the potent fact that teeth are perishing by thousands for want of good dentistry, or saving methods; the public are unawakened to the importance of this, and of the usefulness of those who are seeking practice.

Hard questions, all of them, and the solution of the first one alone is perhaps difficult. The systems of teaching are faultly. Partly so on account of want of outside pressure, forcing up the standard, for the Schools are mainly what the profession at large make them, and partly on account of the fact that those teaching are not made independent of the classes in point of pay. Competition of Schools, the pressure from those representing applicants for matriculation—practitioners, etc;—the sad want of preliminary training on the part of matriculants themselves; the fact that many who desire to enter also desire work at once on account of poverty and so cut themselves off from careful theatrical training—all these are facts which tend to lower the standard of graduation, and exert a pressure, which no faculty, unless unhampered by liberal endowments, can ignore or avail. No man with eyes open can fail to see how in our large cities the best teaching is done in the public schools, where teachers are independent of patronage; and the law is a general one, and will have its effect so long as human nature is what it is.

H.

BIBLIOGRAPHICAL.

The Origin and Formation of the Dental Follicle.—The first memoir on the Development of the Teeth, by Drs. Charles Legros, and E. Magitot.

A translation from the French, with introduction and notes, by M. S. Dean, of Chicago. Authorized and reviewed by Dr. Magitot. Publishers: Jansen, McCleiry & Co., Chicago, 1880.

Dr. Dean, in presenting this admirable translation of a most interesting treatise on Dental Histology, has made a valuable

addition to dental literature, which we have no doubt will be received as the labor in its compilation deserves, and the talent required merits. The need for such a treatise as Dr. Dean has presented, and the reputation of such distinguished histologists as Drs. Magitot and Legros, will ensure a welcome for this volume, which must reflect the highest credit on the translator as well as the authors.

The conversational style in which the work is written has the advantage of rendering what many might, perhaps, term a dry scientific subject, interesting as well as instructive, and may have a tendency to induce those who take but little interest in abstruse science to carefully peruse it, and thereby receive the benefit which such a work must confer upon all in any manner interested in the subject. To the dental student it will afford much instruction, and render easy of comprehension one of the most difficult subjects he is required to understand at the commencement of his Collegiate Course.

The work is finely illustrated and gotten up in a style, so far as type, paper and binding are concerned, which reflects credit upon the Publishers.

The American Agriculturist.—We advise all our readers, whether they own a foot of land or not, to supply themselves with that treasure of useful, practical, reliable information, the *American Agriculturist*, so named because started 38 years ago as a rural journal, but now enlarged to embrace a great variety of most useful reading for the Household, children included, for the Garden, as well as the Farm—for all classes. Each volume gives some 800 original Engravings, with descriptions of labor-saving and labor-helping contrivances, of plants, fruits, flowers, animals, etc., including many large and pleasing, as well as instructive, pictures for young and old. The constant, systematic exposures of Humbugs and Swindling Schemes by the *Agriculturist* are of great value to every one, and will save to most persóns many times its cost. Altogether, it is one of the most valuable, as well as cheapest, Journals any where to be found. The cost is only $1.50 a year, or 4 copies for $5. Single numbers 15 cents. Subscribe at once for 1880, and receive the

rest of this year free, or send 3-cent stamp for postage on a specimen copy. Address Orange Judd Company, Publishers, 245 Broadway, New York.

Winter and its Dangers—By Hamilton Osgood, M. D., Editorial Staff of the *Boston Medical & Surgical Journal.* Publishers: Lindsay & Blackiston, Philadelphia, 1879.

This small but highly interesting and instructive treatise forms one of the Series of American Health Primers; the publication of which is so beneficial to health and comfort.

Commencing with general considerations, in which negligence of health is justly termed sin and stupidity, the author discusses the dangers arising from errors in dress, carelessness and ignorance in bathing, inattention to pulmonary food, danger from over-heated air, indifference to sunshine, sedentary life and neglect of exercise, dangers of school life in winter, winter amusements, etc. The portion of the work relating to proper ventilation of sleeping apartments is of the greatest importance; and this small work is vastly more useful than its size would appear to indicate.

St. Maur; An Earl's Wooing.—By John Carroll, Caves Baltimore Co., Maryland. Publishers: T. B. Peterson & Bros., Philadelphia, 1879.

This is one of the series termed "New Society Novels," and deserves a prominent place in the standard literature of the day.

It contains nothing objectionable or common-place, and is highly creditable to its author, who is a well known and highly esteemed citizen of Maryland. The scene is in England, though some American characters, drawn without exaggeration, figure in it. It is decidedly sensational, with a well-constructed story, which might be regarded as too highly wrought, were it not that every mystery is set even at the close. The various action takes place in high, middle, and what may be called low life—though it does not go so far into the depths of the latter as "Oliver Twist." One of the best characters, of whom too much is not made, is a clever Detective. Most of the scenes are worked out with great effect; and the destruction of a great country man-

sion, by fire, in England, in which the heroine and hero are saved by the devoted self-sacrifice of Trevellyan, the Earl's tried and true friend, is most powerfully written, and the death scene of the latter, is a wonderful bit of tender pathos. There is an exquisite little poem in it. The story has numerous good points, and is nicely told. The author is well acquainted with London society, and in all respects this romance of the present time will be found highly original. St. Maur; an Earl's Wooing, is published in a large square duodecimo volume, paper cover, price 75 cents, uniform with "L'Assommoir," and will be found for sale by all Booksellers and News Agents, and on all Railroad Trains; or copies of it will be sent to any one, to any place, at once, on their remitting 75 cents in a letter to the Publishers.

MONTHLY SUMMARY.

Nitrous Oxide in Asthma.—Dr. D. Crofton has an article in the *Med. Press and Circular*, on the therapeutic effect of the inhalation of the fumes of burning nitre paper in asthma. He writes—

It will be well to examine the method, or presumed method, of relief. This we believe to be due to two factors—first, the effect of the liberated nitrous oxide upon the nervous system, having its secondary effect upon the muscular one, and so relaxing the spasm which contracts the bronchial rings, thereby opening them, and allowing inspiration and expiration to go on freely. Next to this comes the benefit derivable from the oxygen also liberated, which can now, through the enlarged diameters of the tubes, be freely inspired to ærate the blood, and afterward freely expired as carbonic acid and watery vapor.

If our hypothesis be correct, it would appear that nitrous oxide alone (or properly diluted) would produce the beneficial effect, although more slowly, by doing for atmospheric air what it does when liberated from the burning paper for its associated

oxygen, and that oxygen alone (or properly diluted) without nitrous oxide, could not be expected to confer the same benefit, as the tubes might remain contracted, and so offer an impediment to expiration of the generated carbonic acid.

In illustration of these two positions, we have heard a remarkable instance. A young geologist of our acquaintance, happening to live in the house with an old gentleman who was asthmatic—upon the latter being seized with an attack at night, made a bagful of nitrous oxide, which he caused the patient to inhale, and which brought immediate relief. Subsequently, on another attack occurring, he gave him oxygen, but with little or no benefit.

In what we have said about nitrous oxide, we have spoken of it in its topical, or presumed topical effects. Its constitutional action should also be taken into account. This is known to be great, from the symptoms which it produces when inhaled by healthy persons, in whom it often brings on the effects of laughing, pugnacity, etc.—*Med. and Surg. Reporter.*

Copperas and other Disinfectants.—A French sanitary authority states that he found that the aqueous solution of one kilogramme of sulphate of iron destroyed the odor of a privy used by one hundred persons, but the effect lasted only twelve hours. Sulphate of copper acted similarly. One kilogramme of solid sulphate of iron lasted for two days. One kilogramme of a mixture of sulphates of iron and copper with carbonate of lime kept down the oder of sulphuretted hydrogen for two days. Liquid sulphurous acid acted rapidly, but its effects lasted for less than twenty-four hours.

Crude carbolic acid masked the odors of the privy, but with another somewhat less disagreeable. The use of parchment paper prolonged the action of the deodorant Thus, one kilogramme of sulphate of iron (*copperas*), contained in a parchment paper bag, began to operate after two hours, and acted during three days; one kilogramme of good chloride of lime, contained in a parchment wrapper, kept the privy inoderous for a period of nine days.—*Med. and Surg. Reporter.*

Dental Caries—M. Maurel, at a recent meeting of the Societie de Biologie, in Paris, communicated the result of his observations on caries of the teeth. He ascribes this affection to the effect of acidity, the absence of salts in certain kinds of water, and to ethnical influences. He has studied the disease in different races, and found that among the Ethiopians the proportion of decayed teeth is 1 to 4; among the Europeans, 1 to 9; and among the Coolies, 1 to 52.

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ARTICLE I.

[Continued from last Number.]

Proceedings of the Maryland and District of Columbia Dental Society. Annual Meeting.

EVENING SESSION, 8 P. M.

The Association was called to order by the President.

On motion the rules were suspended, and Dr. James McPherson being nominated, was duly elected.

The reorganization of Sections being the special order of business, the following named gentlemen were elected Chairmen:

Section 1—Dr. R. B. Winder.
" 2 " W. H. Atkinson.
" 3 " E. P. Keech.
" 4 " J. J. Caldwell.
" 5 " C. E. Duck.
" 6 " R. Finley Hunt.
" 7 " H. C. Thompson.
" 8 " B. F. Coy.
" 9 " W. W. Evans.
" 10 " R. B. Donaldson.

On motion, the numbers of the Sections were changed so that they should come in order, viz:

Number 1—Operative Dentistry.
" 2—Metallurgy and Chemistry of Metals.
" 3—Artificial Dentistry.
" 4—Dental Education.
" 5—Anatomy and Physiology.
" 6—Histology and Microscopy.
" 7—Pathology and Etiology.
" 8—Diagnosis and Therapeutics.
" 9—Chemistry and Materia Medica.
" 10—Anæsthesia and Anæsthetics.

The President called for reports of Sections.

Dr. Thompson stated that for the first time since he had been a member of the Association he was ashamed to say he had no report. He communicated with each member of his section and received no answer. He proposed this year to make the members of his section work.

Dr. Coy, Chairman of section on Operative Dentistry, read the following report:

We will refer to, (in the form of queries,)—

1st: The relative value of the different preparations of gold for filling and restoring lost parts of teeth, also contour, *versus* simple flush fillings. When should self-cleansing spaces be left between teeth, and when contoured to close at the grinding surface, or supra-contoured at the cervical wall to prevent lodgment of food at the necks of teeth, (bicuspids and molars,) the gold to extend a little above the free margin of the gum and flush to the border thereof. This contour can form a longitudinal ridge approaching an edge that will prevent any lodgment that may force the gums further from the necks of teeth. 2nd query: Under 20 years of age, what is the best material or materials for *saving* frail, badly decayed front teeth? Shall leave important points open for discussion of these suggestions. One week would not afford time to make a full report.

2nd: We might ask in this place what are the necessary qualifications for a dental surgeon, but will say in a few words what no one will take exception too, viz. that he should posess a minute knowledge of the anatomy of the oral cavity, both as to its soft and hard parts, together with their relations to and with other parts of the organism —this cavity as a cause of disease and its symptoms of disturbance in remote parts by reflex irritation.

His knowledge of physiology should be general and thorough, and at least a sound knowledge of dental therapeutics. This comes more properly under section 10, but this is where the two Sections meet and are interwoven.

3rd: In diagnosis of the pathological conditions of this cavity, (by this I mean that decay of the teeth is a pathological condition, and here again we find ourselves slipping into Section 4,) the dental surgeon must know what health is in order to understand the departures from it. Whether or not the teeth are in a condition (and the surrounding tissues,) to operate upon at once and without treatment? How much and what treatment will be necessary before an operation can be ventured upon? Also in operations upon the dental organs, he must appreciate the relations of the teeth and mouth to remote parts of the organism. For example, would he be justified in subjecting a patient, pregnant, to a severe operation in filling or the still more injurious operation of extracting teeth, unless allowing the tooth to remain would be the worst of the two alternatives. Among the tumors and other growths of the oral cavity he must be able to distinguish between the malignant and non-malignant; between the cyst and the pus secreting formations, and all the different diseases, symptomatic and otherwise, that present themselves on the free margin of the gums and the peridental membranes.

4th: If he does not know what constitutes a regular set of teeth—a proper occlusion—his attempts to regulate misplaced organs, or a crowded condition of the arches, will prove often, a worse than failure—facial distortion. If he

is wise, he will not attêmpt to do what others claim to have done, when careful study of the case will show the result sought for hardly compatible with art and science, and interference not justifiable. `Narrow arches contracted—often hereditary—will not hold a full set of large teeth.

5th: What was once the province of the dentist "to extract teeth and stop holes and make false teeth," is now happily elevated to the higher plane of science and art, and in demanding of the dental practitioner to protect these organs from decay and other modes of destruction, and the removal of teeth *required* in the arches a *denier resort*, after all other means for their restoration have been exhausted. The present standing of our profession, with all the modern improvements at our behest, including the different materials for arresting decay and restoring form to organs that have lost parts or whole of their crowns; we have but one more step, it would seem, to have all we could desire as operative dentists, and that would be a materi l sufficiently durable, and the color desired, and not affected by thermal changes—adhesive to the walls of the cavity formed and capable of resisting any and all acids of the oral cavity, whether to the manor born or introduced from without, then our glittering operations in that god of metals would be replaced by less show, but more worth (to the patient,) and less artificial dentures.

6th: Mr. President, had I not been compelled to attempt to do the work for my entire section, I intended to undertake a paper on dental surgery proper of the oral cavity and adjacent parts. We are all doubtless familiar with Dr. Garretson's operation of removing the entire tonsil in acute tonsilitis or quinsy, by the steel wire with temper drawn, after twisting the tonsil from between the two curtains of muscular anterior and posterior by the turning of a bent needle, thus avoiding the danger of the knife to the internal carotid, and no bleeding from annoyance. Will refer to only one operation, that the removal of the *epulis tumor*. My own practice has been to remove with the scalpel the

tumor from its attachment to the alveolus and neck of the tooth or teeth, but *not* extract the teeth, which has heretofore been insisted upon, to prevent its recurrence. I take a large burr (in the engine,) and burr all the alveolus entirely off that has been covered by the tumor, and even the peridental membranes. Another operation would be to extract and scrape only that portion of the tooth where tumor connected with membrane of the tooth socket, and replace the teeth.

7th: I trust that hereafter the Chairman of this section will not have to toil alone. It is an important one; the health of the speaker has been bad, and I suggest that the combinations of this section with sections 4 and 8, might be well.

The above report is not what I know the Association is entitled to, but such as it is, is most respectfully submitted.

The President announced the subject open for discussion.

Dr. Hunt. Briefly I would say with reference to the paper just read, that it touches upon a point which is a subject of very earnest discussion in our profession — that is the *manner* in which proximate cavities should be treated. One fact seems to me to be left out of the calculation in these discussions, and that is that the teeth that require filling, in spite of the utmost after pains taken with them, are very liable to decay in other places than those that have been filled. For instance: a tooth decays on the proximal surface, the cavity is properly prepared and properly filled; yet you still have a portion of the tooth between the filling and the gum, in which food can lodge and remain in contact with the tooth, producing a recurrence of the trouble. It seems to me this point should have more attention than it receives. I had occasion to fill some such teeth for a patient within the last ten days, in which in the mesial proximal surface of a second bicuspid, the filling had been apparently well put in. But decay had recurred between the gold and the original wall of the cavity, and I found not only decay there, but the whole surface of the

tooth between this buccal edge of the filling and the gum was partially disintegrated. Now this recurrence of decay would have occurred undoubtedly whether the filling had been contoured or flush. The teeth were not widely separated. The decay was caused by decomposing food, the remedy I must confess I am not able to point out except in general terms. We must direct our attention to the constitutional condition of the patient and remove any vice that might exist. If that tooth had been filled, and what is called a self-cleansing space left between the two, I do not think it would have decayed in that position. While we are directing our attention to the method of inserting a filling, and to the form, whether flush or contour, we should also direct our attention particularly to the cause of the original decay in that mouth, and guard against that cause in future, and also in other parts of the mouth.

I want to maintain two points that have not been expressed in operative dentistry. One is that gold of itself produces no electrical action. The second is of more importance since the promulgation of the utterances and positions of the new departure corps. That is while amalgam fillings conform to the general forms of the cavities, the surfaces do not, but are rough and indented, thus being liable to leak. In view of this I want every one to make specimens with amalgam, and I think if they will fill a cavity either in a tooth or in a hole made for the purpose, and break it open and examine with a magnifying-glass, they will see that it is not so smooth a surface as would prevent fluids from entering between the filling and the walls of the cavity. I have been surprised to find so much difficulty in producing between the surface of the cavity and the amalgam, the smooth regular surface there should be. Until we do that, amalgam will not fit the cavities as gold fillings do.

Right in that connection we are fain to agree to some extent with the gentlemen of the new-departure when they, through Dr. Flagg, take the position that in some instances

it is probably better for the tooth that the filling does leak. What a state of affairs is that placed before us? We see fillings of amalgam that have been in for five, ten or twenty years that are preserving the tooth, but the tooth is black. Why is this so? We must follow out our investigations until we say certainly what it is. Foster Flagg is not understood by his professional brethren. I do not think it will do for any one to condemn him until he has examined the matter thoroughly, and finds ground for condemnation. Our own experience has been that amalgam does preserve teeth that gold would not.

DR. FOSTER. Mr. President, I would like to ask Dr. Hunt if in his experiments he found the amalgam to contract or expand?

DR. HUNT. I will say I have made no experiments in reference to expansion or contraction. My experiments have been as to the surfaces.

DR. FOSTER. What is the doctor's belief as to the expansion or contraction in mixing?

DR. HUNT. I can only give my belief without any ground for it. Do you mean after its insertion or while setting? I must say I have not been able to make up my mind, whether it is expansion or contraction.

DR. VOLCK. Mr. President, some years ago there was a great deal said about using amalgam among the older operators. We are cautioned against amalgam. They made us promise at the commencement never to use amalgam.

I made myself some blocks of steel and had holes drilled through them. The blocks were about a half-inch thick. The holes were carefully drilled through, ranging in size from a sixteenth to a quarter of an inch. I filled the holes in one block with the greatest care with the best amalgams I could get; the corresponding block with gold. The amalgam was put in with as little mercury as possible. After a few days it was very hard and everything seemed tight. You could take the block filled with gold and you would have to use a heavy hammer to drive the plugs

through, but in every instance I found with very little pressure I could push my amalgam through. The gold was polished when it came through, but the amalgam was rough. It proved to me that there was an absolute contraction in the setting of the amalgam.

DR. FOSTER. That is not exactly what I want to get at. Everyone I think believes that is the case. But the question is in the mixing, whether the contraction takes place at that time or afterward. In the experiment the gold being softer, might spread under the hammer and go through harder than the amalgam, it being harder and less liable to spread.

DR. HUNT. I want to say here that this new-departure corps is composed of seven gentlemen. They are divided into sections. One has charge of the mechanical, another of the metallurgical, and a third of the dental part. The result of their experiments with reference to amalgams, agree with Doctors Volck and Foster, that amalgams do shrink. After a certain length of time the edges of the amalgam is seen above the tooth.

DR. FOSTER. That fact shows that there has been expansion at the same time.

DR. HUNT. I will state for the information of the gentlemen present, that the ground taken by these gentlemen who have experimented is that this projection, if the filling has been in the mouth for a length of time, is caused by an effort of the amalgam to assume a spheroidal shape. They say that mercury always does this; every little piece assumes a spheroidal shape. In assuming this shape it presses against the sides of the cavity and very naturally presses out of the only opening it has. I think that every gentleman of the profession living in Baltimore have seen at Snowden & Cowman's, a tube filled by Flagg. The surface of that material is beautiful as the surface of the silvering of our mirrors. The silvering of our mirrors is done by having the amalgam so wet with mercury as to fit the back of the mirror perfectly. This

filling does fit the surface of the tube perfectly, but you can not get out of all the amalgams one that will produce that same effect under your hands. I have tried them all. I have seen Dr. Winder fill a tooth in the hand and break it open to show me; and there is apparently a smooth surface on that portion of the amalgam in contact with the tooth, but not such a surface as would prevent leakage. If we can make amalgam so that we can place it in the cavity and have the surfaces of it fit the cavity; come in contact with the dentine as we can our gold fillings, then we will have no more black fillings. We may have the surface black, but the surfaces in contact with the tooth will not discolor.

In my paper I stated that filling materials containing chlorine cannot be relied upon for permanent fillings. The grounds stated there are sufficient to account for the failure of plastic fillings made with other materials than alloys. And the fact of one, two, or occasional fillings lasting in the mouth for a number of years, does not neutralize the force of the grounds taken in that conclusion. It only shows in my opinion that in those cases where these fillings have lasted a long time, there were no acidulous agents to act upon those fillings. I have placed plastic fillings in different parts of the same mouth. I have found some of them last well and others not so well. I have tested those mouths and found the fluids gave a different reaction. I think every one will bear me out when I say plastic fillings made of oxcyhloride of zinc, or phosphate of zinc or those other salts, are not to be relied upon as lasting any length of time when placed near the gum. I have placed these oxychloride fillings in such cavities and found they did not last, and that portion of the filling nearest the gum would fail first, and fail entirely before the other parts would be effected. A piece of red litmus paper placed under the free edge of the gum, will, in four cases out of five show an alkaline reaction. I was much interested in a case that came to me recently: I extracted a cuspidatus

which could not be saved. The bicuspid next to it was getting into the same condition. The lower bicuspids had a very large amount of salivary calculus upon them. I tested the secretions under the free border of the gums in this case, and I found that the red litmus paper became immediately blue; in some parts of the mouth a deeper blue than would be produced by the fumes of ammonia.

Dr. Duck. In reference to plastic fillings, I must say my experience has been just the reverse of Dr. Hunt's. I have found oxychloride fillings frequently last upon the proximate surfaces of first and second molars, better than in most other localities. I have seen them there for a great many years, and found them in a good state of preservation, and I attribute the success in these particular localities to the slight deposit of carbonate of lime, coming from the saliva at these points. They seem to be coated with this carbonate of lime, and that seems to keep the fillings intact.

Dr. Hunt. I do not pretend to say Mr. President, that this is so in all cases, but these cases form the exceptions rather than the rule, and simply show that these agents have not been at work. If any one finding these fillings lasting a long time will test the secretions of that part of the mouth, he will find them very nearly neutral in their action. I think if Dr. Duck will look back, he will find that comparatively speaking, the number of plastic fillings that are preserving the teeth for any length of time is very small.

Dr. Duck. Yes sir, I believe it is so.

Dr. Winder. Dr. Coy asks in the commencement of his paper a very important question. That is, whether teeth should be contoured under the age of twenty, or should be separated. This is a question which I think involves everything. It is deep seated; reaches a long way. I believe the form of the tooth has more to do with its resistance to decay than almost anything else; certainly more than anything else, admitting the tooth substance to be of equal quality.

Dr. Coy. I would like to correct Dr. Winder. I asked the question, what is the best material under twenty years of age for preserving teeth? I did not ask anything about cutting teeth away.

Dr. Winder. We have this practice of cutting teeth carried to the bitter end by a gentleman of this city; that is Dr. Arthur. I think he went so far at one time as to lay down the bold proposition that if any of the incisor teeth were decayed on their proximate surfaces before twelve years of age, then all the other teeth should be separated by cutting apart. There are others who believe in contouring under any and all circumstances. I appeal to all of you gentlemen to know if you can get teeth up to the typical form, do they decay at all? If you take the teeth of an Indian or a Negro, or the finest white race, where they come up to your ideal of perfect formation, do they decay at all? I have found that this was certainly so in the examination of the teeth of the crania of the savage races. Observe this formation. You will notice that these typical or ideal teeth have single points of contact, and that this point is near the cutting edge. Having only one single point of contact with no broad surfaces in opposition, food does not pass in readily, and even should it do so it at once passes into an open, self-cleansing space. With such teeth decay is exceedingly rare. I have noticed further that where the round, regular arch is found, that but little crossing of races has occurred. I have had the most positive and absolute knowledge that the crossing of races does produce such a change in the jaw as to bring about a destruction of teeth, and irregularity of position in the arch. Now what should be the remedy? As in these ideal cases there is a single point of contact, every arch that can should be restored to the ideal type. When you get teeth out of all sorts of races, it sometimes becomes difficult to bring back this point of contact.

A man must weigh cases and decide for himself in each particular mouth how he shall proceed so as to bring it as

near as possible to the highest type of ideal perfection. The formation of the teeth and their relation to each other should decide him as to the character of operation to be performed. It might require contouring or it might require cutting. I do not think anybody can safely lay down any precise rules in regard to this. I should always pursue the plan that I thought would bring the mouth back to the nearest approach to a normal condition.

In regard to amalgams and plastic filling materials generally, I occupy very conservative ground. I have found all these fillings of some use somewhere, and I have used them wherever I thought it best. I would be as violently opposed to a man who would all together condemn cohesive gold, as I would to a man who would condemn non-cohesive foil. I have seen too many fillings that have been standing in the mouth for years and years of non-cohesive and cohesive gold; fillings which have stood the test of time. I think it is much easier to put in a filling of non-cohesive, than one of cohesive gold. I have seen fillings of soft foil that have been preserving the teeth for many years, that you could stick an excavator through from one end to the other. Carelessly put in, a filling of cohesive gold you will all admit will fail at once.

Dr. Coy. Mr. President, I have used amalgams for over thirty years. I have amalgam fillings in this city that have been inserted over a quarter of a century. They were made of Mexican coin filed up. If these amalgams leak, it is better that all leak. They have preserved the teeth. We all know that in the use of gutta percha fillings we preserve the teeth, and we all know that gutta percha leaks. Is it absolutely necessary under all circumstances that moisture should be executed in order to prevent the teeth from decaying? I have found these amalgam fillings black, but doing good service in teeth that were too bad to fill with gold. If any gentlemen will tell me of anything that has yet been presented to the dental profession that will save the teeth twenty-five years, then I will use that instead

of amalgam. The amalgams of the present day take a very fine finish, but the tendency to a globular form is very easily recognized. If you leave an exposed surface, oxydation will take place of course. In putting in an amalgam filling, I use a burnisher; I put some in and burnish it over, and then put some more in and burnish that over.

Dr. Duck. I would like to ask Dr. Coy if he came across teeth twenty-five years ago, like the teeth of the present day?

Dr. Coy. I would say that these teeth were nothing but shells.

Dr. Duck. You filled them at that time pretty much as you would now?

Dr. Coy. Yes, sir, I did.

The President announced clinics for the following morning, by Drs. W. W. Evans and C. E. Duck.

Baltimore, Thursday, Sept. 4th, 1879.

The Association met at 11 A. M., the President in the chair. The reading of the minutes was dispensed with.

Dr. D. C. Ireland was elected an honorary member of the Association, and Dr. W. H. Hoopes an active member.

The Executive Committee made a report on Instruments and Appliances, which, on motion, was recommitted and a modified report made as follows:

Upon Instruments and Appliances your Committee would report that they are much pleased with the nickel-plated, socket handle instruments of Johnston Bros., and cheerfully recommend them to general use. The advantages are that they are a cheap article, and that the difference in the patterns of the handles enables the operator to rapidly select the points he desires to use.

The hand piece of Johnston Bros. we cannot recommend. It is intricate in its construction, but the main objection is that but one form of instruments fits it.

In regard to the White Chair, we have no hesitation, and are unanimous in the opinion that it is the best chair that has been presented to the profession up to this time, and that it is a luxury to both patient and operator.

We also think very highly of, and call attention to the apparatus exhibited by Dr. T. S. Waters, of Baltimore, for holding engine burs, keeping sufficiently oiled to protect them from oxidation, and the addendum of an arrangement for heating water, with alcohol lamp in combination with it.

R. B. Winder,
B. F. Coy,
H. C. Thompson.
Executive Committee.

Under Miscellaneous Business, Dr. Foster offered the following resolution which was adopted:

Resolved, That when any new material or compound for filling is offered to any member of this Association, that member be requested to refer the matter to the section on Metallurgy and Chemistry of the Metals, and that section be requested to furnish the members with an opinion as to its merits.

Dr. Thompson moved that all other new materials coming before the profession be referred to appropriate sections. Adopted.

The President announced the discussion of papers on Operative Dentistry and Metallurgy, open for discussion.

Dr. Coy stated that he wished to amend his report on Operative Dentistry, by speaking of conservation of pulps and roots of teeth.

Dr. Atkinson made some appropriate remarks on the subject.

On motion of Dr. Coy, these sections were passed.

Section 9 (Artificial Dentistry,) was also passed.

Dr. Noble presented from the Section on Dental Education and Literature, the following report:

It is felt that this section has not been conducted upon the plan, or with the vigor necessary to the production of

the best results, but the blame does not all lay with the chairman. It is an old, well-worn subject, yet it is the foundation of all our work, and upon the right and proper education of those entering our profession, depends our future standing.

It is, we believe, now conceded that the only proper entrance to our profession is through a regular course of study in a dental college, and the holding of a diploma which should be D. D. S., showing that the holder has passed a satisfactory examination in dentistry; many of our societies require a diploma to be eligible to membership—we hope it soon will be in all.

In last year's report the hope was expressed that the two colleges in our jurisdiction should unite or consolidate, but we did not expect to see it accomplished within the year, yet such is the pleasing fact, and we now have but one dental college, the old Baltimore College of Dental Surgery, in which building we are now assembled, founded mainly by the labor and energy of Chapin A. Harris, whose very name makes our hearts swell with pride, and whose labors are a rich heritage to our profession. It is generally felt, that by the consolidation of the two schools and the unity of forces, a better school will be the result. The College Board of Visitors comprise some of our oldest and most skillful operators, and we feel sure that they will examine carefully all students who present themselves for the honors of the college, so that no unworthy person shall receive its diploma. We think if the confering of degrees were placed in the hands of a board of regents, as in the plan of the Maryland Dental College, it would be likely to elevate the standard of graduation.

We would reiterate last year's report in reference to the appointment of teachers, that the voice of the alumni should be consulted by nomination, or some plan that would give the profession a voice in the selection; and also that each professor be elected for a definite term, so that the chaff could be winnowed out.

The length of pupilage and the time one shall be in attendance upon lectures before he shall be entitled to go forward for examination, was brought forward and discussed at the last meeting of the American Dental Association, and the attempt made to fix the minimum limit of attendance to two sessions. While we think that no one can properly be instructed in a less time than two years, yet to say a proper knowledge of dentistry can only be obtained by an attendance of two years without reference to the knowledge he may have obtained elsewhere, would be very unjust to any one who had spent years in study and practice outside of college walls. Thorough preparation should be insisted upon without reference to the time or place of its acquirement, and no diploma should be granted under 21 years, and only upon the most thorough and strict examination. No student or pupil should be received without a careful preliminary examination as to his education, and moral as well as mental standing. It is feared that these qualifications have in many cases been disregarded both in colleges and private offices.

Clinical instruction should be more carefully attended to, so as to give the student all the different ways of operating, and the more the better; yet a competent instructor should always be at hand to direct and explain. My observation in different schools last winter, showed a great need of a competent head to direct and lead students. They were left too much to their own resources rather than shown how to perform any given operation. There must be thoroughness and ability in the operating room and laboratory, as well as in the lecture-room, for all operations must be good, or our knowledge will be as "sounding brass." There must be aptness in teaching, and judgment to know what is in a student; and honesty and courage to reject all who do not come up to a proper standard.

In most of our colleges there is a great lack of cleanliness; that is a bad example to the student; there ought to be a greater abundance of napkins and towels, and the use of

them enforced by precept and example, and the student be taught to be neat and cleanly in all his ways. Our college is in need of a better building and more extended accommodations. I understand that the State has helped our brethren of the medical profession. Can we not hope for the same? It is the oldest; let us labor to make it the best in the country; and it can be so by a little judicious pruning and grafting, and personal jealousies be not allowed to mar its usefulness.

ARTICLE II.

[Continued from last Number.]

Transactions of the Odontological Society of Great Britain.

One more point is of interest, and that is, having discussed what is the nerve of the special sense of taste, to decide what the special sense of taste itself is.

Whether it is a special sense of the same order as the sense of sight, or hearing, or smell?

Whether much of it may not be due to the assistance of the sense of smell? Every one knows how greatly a cold and the subsequent blocking up of the schneiderian membrane and suspension of the sense of smell affect the kindred sense of taste. We all remember the time-honored practice of holding the nose while taking medicine, and can all speak warmly of the advantages derived from the partial suspension of the sense of taste thereby. Moreover, most substances that excite taste excite smell also, and in most cases the taste very much resembles the smell.

That these facts indicate a close relation between the two senses is clear, but to argue from them that taste does not exist by itself (as has been done) is, I think, straining a point.

The sense of taste is certainly not so specialized—so thoroughly different from common sensation—as sight or hearing, but I think the difference is due, not to the nature

of the nervous fibres, but to the degree of elaborateness in the end organ by which the sensations are transmitted to the nerve.

At one time in intranterine life all nervous elements were very similar. Michael Foster has beautifully described the simplest nerve as being "a strand of highly irritable protoplasm, stretching from one cell to another." All these strands and their cells were equally susceptible to waves of light or waves of sound, or the sense of touch. Presently various bundles begin to adapt themselves for their special mission, much as medical students, after their general education, begin to study specialties, and, forgetting much of the little they ever knew of the other branches of the great profession, devote themselves to become specially skilled and adapted for the special branch that is to be their adult pursuit. In both cases some become more specialized, some remain somewhat generalized, and curiously enough the senses in which the nerves most specialized are notable fields of specialty for the surgeons—the eye, the ear, and the mouth.

I feel conscious that I have already strained your patience to its utmost, and must thank you very much for having listened so patiently to the lubrications of so young a member of your Society; and may I suggest in conclusion, that to deny the existence of the sense of taste would be gross ingratitude, and that it would be hardly less ungrateful to deny the credit of whatever pleasurable sensations we experience through the medium of this sense to the glosso-pharyngeal nerve.

DISCUSSION.

The President congratulated Mr. Underwood on his successful paper; he had treated the subject in a very clear and able manner. It was very gratifying to him, as one of the original members of the Society, to find the second generation of old and esteemed colleagues thus coming forward to support it; the fact spoke well for the future prospects of the Society. There were many present who

were more capable than himself of throwing light on the subject; he would, therefore, leave them to express their opinions on the points which Mr. Underwood had raised.

Mr. Coleman said he felt obliged to confess that during the years which had elapsed since his student days his knowledge of minute anatomy, with reference, for instance, to the communications between the ninth and fifth pairs; had become rather rusty. But he well remembered that, even in his time, the glosso-pharyngeal was generally considered to be the special nerve of taste; whilst the lingual branch of the fifth was thought to supply the tactile papilla on the fore part of the tongue. So that Mr. Underwood's conclusions did not strike him as anything very novel. It must be remembered that much that was generally considered to be taste was really derived from the sense of touch,—as, for instance, the sensations produced by salt, mustard, &c. Then, again, the sense of smell largely assisted the sense of taste. This was well exemplified by the "boquet" of delicate wines, which was really the impression produced on the sense of smell by the volatile ether which they contained. Mr. Underwood's investigations had, therefore, only confirmed the correctness of what he had been taught—viz., that whilst the eighth nerve was the special nerve of taste, the impressions we derive from it were greatly assisted by the sense of touch as conveyed by the branches of the fifth; and by the sense of smell conveyed through the filaments of the olfactory nerve.

Mr. Oakley Coles said he should like to ask Mr. Underwood if he had made any investigations as to the power of the soft palate to convey the sense of taste? He remembered reading some very interesting experiments made on a man whose tongue had been completely excised for cancer, by Mr. Annandale, of Edinburg, which went to prove that the soft palate possessed this power to a considerable extent.

Mr. Hutchinson asked Mr. Underwood if he could explain why patients complained that they could not taste when the hard palate had been covered by a suction-plate?

If part of the plate was cut away, they said they could taste better. The special nerve of taste was chiefly distributed in the neighborhood of the papilla circumvallata. Why, then, should the sense of taste be destroyed by covering the hard palate? Had any of his researches thrown any light on this point?

Dr. Walkor said he also had great pleasure in congratulating Mr. Underwood on his interesting and well-digested paper. With regard to the loss of taste which resulted from covering the hard palate, he thought his experience would enable him to offer a tolerably satisfactory explanation. About eighteen years ago he fitted an upper denture for one of the best tea-tasters in the city. For three weeks or a month afterwards this gentleman was almost incapacitated from following his business. Dr. Walker with difficulty persuaded him to continue to wear the denture, and suggested at the same time that in tasting he should place the tip of the tongue between the lips. The manœuvre was perfectly successful, and in a short time the patient was able to do his work as well as before. He believed that the lost of taste was due to the contact of the tongue with a hard dry surface; moisture was certainly necessary for the clear perception of taste. This explained also the loss of taste which accompanied a cold; the nose became obstructed, respiration had to be carried on through the mouth, and the tongue was kept in an abnormally dry state. More recently he had fitted an upper palate for a wine-taster. This patient had at first the same difficulty in following his employment; but now, by touching the lips with the tongue, he is enabled to distinguish the qualities of wines as well as before.

Mr. Oakley Coles said the most curious cases he had met with were those in which patients had lost part of their hard palate, and had at the same time lost their taste; but they recovered this when an artificial palate was fitted. He believed that the loss of taste which followed the insertion of a hard rubber palate was due to the fact that the tongue

came in contact with a hard substance to which it was not accustomed, and that as soon as the tongue became habituated to this novel sensation the power of tasting returned.

Mr. David Hepburn said that the fact that wearing an artificial denture in the upper jaw would impair the sense of taste might be traced to the same principle which explained the loss of taste which accompanied impaired function of the olfactory nerve—viz., that all the senses worked in concert, each one assisting the others. So if common sensation be impaired the sense of taste was diminished, and in this way an unnatural substance coming in contact with the tongue would indirectly but not the less decidedly affect the sense of taste. He thought that Mr. Underwood appeared to lose sight of the real use of the chorda tympani. The portio dura was essentially a motor nerve, and three of the cephalic ganglia obtained their motor power from it; thus Meckel's ganglion got its motor supply by the great petrosal, the otic ganglion by the lesser petrosal; and it seemed to him natural to suppose that the submaxillary ganglion obtained its motor surply by means of this chorda tympani. It seemed to him also more rational to suppose that the fifth nerve had itself the power of conveying a sense of taste than to attempt to explain the fact by such roundabout and complicated connections as Mr. Underwood had endeavored to trace. With regard to the support which Mr. Underwood's theory received from experiments on animals, it seemed to him to be a very difficult thing to decide between mere sensation and taste in animals, which had no power of expressing their feelings. Mr. Underwcod had said that division of the seventh nerve in the petrous portion of the temporal bone was accompanied by loss of taste; he should be glad to know whether under these circumstances taste was lost on both sides, or only on the side supplied by the cut nerve?

Mr. Underwood, in reply, said that Mr. Coleman's idea that true taste was only derived from the back part of the tongue, and that the sensation which was mistaken for taste

at the tip was a compound of touch and smell, was one which was believed in by some authorities. There was, however, no doubt that the fore part of the tongue did possess the power of appreciating taste to some extent. Others, unable to deny this fact, had sought to explain it by supposing that sapid substances placed on the front of the tongue were very quickly dissolved, and that particles were carried back with the moisture. Without denying altogether the correctness of this supposition, the fact remained that a distinct difference in the power of tasting had been observed both after section of the chorda tympani and in patients in whom this nerve had been injured by disease. He thought that the explanation already given of the loss of taste, which followed the insertion of an artificial palate, was probably the correct one—that it was due to the tongue coming in contact with a surface to which it was not accustomed; and that the power would be recovered after a time, as the organ became accustomed to the presence of a foreign body in the mouth. With regard to Mr. David Hepburn's criticisms, time would not allow him to reply to them fully. He could only refer him to the authorities already quoted, feeling sure that if he would read them carefully he could hardly fail to be convinced. Mr. Hepburn had asserted that the chorda tympani was a motor nerve; but Dr. Hughlings Jackson and others had cut this nerve, and then stimulated the peripheral portion by means of a galvanic battery, with no effect upon muscular movement. It seemed to him quite as unlikely that the tongue should be provided with two motor nerves as that it should have two nerves of taste. Dr. McDonnell's case was especially conclusive on this point. The chorda tympani had been destroyed by disease; yet, although the patient had lost all perception of taste over the front of the tongue, sensation and motion were unimpaired.

The President, after proposing the usual vote of thanks, which was carried unanimously, announced that at the next meeting (in November) he hoped Professor Flower, of

the Royal College of Surgeons would read a paper, "On some Peculiarities in the Development of the Teeth and Jaws in certain tribes of Circassians and Mongolians."

The Meeting then terminated.—*Dent. Miscellany.*

ARTICLE III.

A National Dental Association.

BY R. B. WINDER, M. D., D. D. S., BALTIMORE, MD.

(Read before the American Dental Convention at Saratoga, Aug. 12, 1879.)

Mr. President and Gentlemen of the American Dental Convention:—I have been requested to say something in regard to dental organizations, and I have to congratulate myself, not you, upon the opportunity thus afforded me of expressing my views in relation to these matters. * * *

We will not enter into a retrospective view of the means by which dentistry has arrived at its present stand-point of excellence. We are all familiar with the past history of our profession, and need not to have it repeated here.

We have to deal with the present and future, not the past. I think, however, we will all admit without discussion the premise, that Society organizations (both local and general) have had much to do with our advancement, and consequently we still need to use these levers to lift us to higher and better things. We thoroughly understand the importance of our State societies, and must therefore labor to keep them up to the highest stand-point. They are the fountains from which the streams of knowledge flow, the laboratories whence the main good comes. The general societies are more like a reservoir, intended to receive these blessings as they are poured in from these various rivulets; the grand emporium into which are carried all the valuable accumulations of labor and toil; the granaries where all the ripe fruits of a rich harvest are stored up as common property for future use and reference; a central library open to all; in the language of Dr. Atkinson, "a big camp-meeting," where all can meet, mingle and be happy.

It is useless, then, to discuss the question of the necessity and usefulness of either local, State, or general dental organizations. We feel quite certain that if these auxiliaries were swept away dentistry would soon stagnate. I shall not, therefore, in this paper say anything about our State organizations more than that we must have them, must cherish them, must nourish them, and that each State must, in its own wisdom, so arrange and govern its own society as to bring it up to the necessities of the case.

Regarding general associations, the times demand a national organization, which shall embrace in its membership all who are worthy, and know no North, South, East, or West, but whose purpose shall be the greatest good to the greatest number.

The advantages which a national organization would give to the whole profession of the United States are as legion, and we may with great propriety enumerate some of them here.

In the first place, I would say that if the United States are to hold among the different people of the earth the reputation in dentistry which has been so earnestly sought and assiduously labored for, it becomes absolutely necessary that we should have a representative and authoritative national organization, indorsed by all the different States, through their State societies, as an exponent of our progress, importance, standing, and culture. An organization of this sort would certainly carry much more weight and authority, both at home and abroad, than we could possibly expect from our present arrangements. It is the very first principle in military tactics—and I believe the same principle will apply in almost everything where there is any labor to be performed, any end to be obtained, or any difficulties or obstacles to be overcome and removed—that in order to *win* "forces must be concentrated, not scattered."

By this arrangement we could get all our materials together. All the best intellect and energies of the profession could, if necessary, be brought to bear upon one ob-

jective-point. Such an organization would be your base of supplies. You would have all your resources in hand, and could operate in any direction you might see fit. You would be clothed with national authority and power. We have much talent of one kind or another in the scattered ranks of our profession; it could in this way be brought together and utilized. Such an organization would of necessity wipe out all geographical lines and sectional prejudices (each district of country having the same guaranteed rights and privileges,) and the end would be the formation of one grand brotherhood, thoroughly united in everything that could tend to promote the present and future welfare and prosperity of dentistry, and in such a harmonious body of representative national men the highest perfection and attainment in dental art and science would be rapidly realized. This organization would also practically relieve us from much inconvenience and annoyance, from the fact that there are many of us members of the three large associations of the country who would willingly attend all their meetings, and who have for all of them the kindest feelings and best wishes, but who do not like to discriminate in favor of one or the other, and both time and money are wanting to effect a meeting with all. Surely something is due to the comfort and health of the dentist's family, and if his vacation and rest from labor involves the yearly attendance upon these meeeings, it becomes irksome. If the State societies would do the work which they should do, all we would need would be a national association where the members of the State societies might occasionally meet. This would not fall hard upon any one, and we could have zealous and earnest meetings, where we could commune, compare old with new, legislate if necessary, and separate and go back to our homes and report all the good that had been effected.

This organization would serve as a Mecca, from which each weary pilgrim might return blessed with the wealth of all the newly-discovered facts in art and science so lavishly bestowed upon all true worshipers at such a shrine.

There was a time when wandering tribes in good old patriarchial days carried with them their government and means of progress. This day has passed. The progress of civilization demands more than this. A country without a government or a head is only anarchy. The medical profession has its representative national organization. The scientists have theirs. Why should not we? We have nothing but praise to bestow upon the present dental organizations; they have fought a good fight and deserve all praise. They have accomplished much good, and deserve the respect and confidence of all. But this is no reason why we should not have a national organization. It strikes me that there can be no reasonable objection or opposition to this movement. Some people, however, will say, Have we not already a national organization? I would ask them, by way of reply, Can this possibly be so, when we have three general organizations,—The American Dental Convention, the American Dental Association, and the Southern (now National) Association? Does this look as if we had a National Association? You might say, We have several! But is there *one,—the* National? We have but one United States Senate and one House of Congress. We had two Senates and two Houses of Congress at one time. But was this an outgrowth of peace and harmony? There must be a head. The profession requires and the times demand this national organization. The American Dental Convention, which is the oldest general society in the country, and the Southern Association saw this two years ago, and passed the necessary resolutions towards effecting it. They made all sorts of overtures to the American Dental Association, and even went so far as to adjourn and meet at Niagara last year, so as to give the American Dental Association no possible or reasonable excuse for non-co-operation. The American Dental Association was invited the year before to meet with the American Dental Convention and the Southern Dental Association, but as I learn from good authority, declined, through a misconception of the object in

view. So that, as the mountain would not come to Mahomet, Mahomet went to the mountain. But the American Dental Association still refused co-operation. We will not say one word against the American Dental Association. It has done much good, and it is the earnest hope and wish of the speaker that it will continue to live and flourish as long as its career is one of usefulnesss. The formation of a national organization does not militate against the interests of any other associations, and is not meant to destroy, but to save.

We will now briefly discuss the principles and general outlines upon which we can form such an organization. The first question that suggests itself to me is, How often and where shall we meet? I would suggest, in reply to this query, that we ought to meet annually,—one year in the North, one year in the South, one year in the East, one year in the West, and one year in the center, at Washington, our seat of government. I would have it meet annually in this way, in order that we may more effectually carry out the object of the organization,—the greatest good to the greatest number; because by swinging around the circle, we adapt our meetings to suit the necessities arising from the scattered condition of our rank and file, and bring the same high privileges within the easy reach of all. Our gain would be in having ultimately the whole profession with us, and our membership might be counted by thousands. Under this arrangement no one could afford to be left out in the cold. I would also suggest as a means of retaining this immense membership, and gradually utilizing it, that no dues be demanded from a member except when he was present at a meeting. With some of us the expense of dues is a very small matter, but there are others (and worthy members of the profession too,) who are not so fortunate. This arrangement would at last amount to the same thing, and place the onus of expense upon each geographical section of the country in turn. Every fifth year we should meet at the seat of government. Obviously we should do this in order to present the appearance of a national organi-

zation to the rest of the world, and in that year we might occasionally invite an international meeting. Unquestionably for this purpose our seat of government should be the meeting-place. But we have other reasons. It is to be hoped (if this organization should be a success) that it will gradually accumulate a library, scientific apparatus, and perhaps a museum, and we would certainly need some central place to store our archives. Again, it becomes important in its influence upon the government itself, if we ever hope to secure the appointment of dental surgeons to the army and navy of the United States,—a need which sooner or later must be supplied. For the reasons given, I would then earnestly advise that we should meet as has been suggested; that the geographical divisions of our territory should in the commencement be definitely agreed upon, so as to leave no room in the future for discussion or contention; and perhaps it would be well to ignore the idea of North, South, East, and West, and divide the country into geographical districts, making provision for territory that will in time become States, so that every part of the country should share the benefits.

In regard to the government of this national organization, I would earnestly recommend that the officers and executive committee should each year be chosen from the section or district of country in which the next meeting is to take place, and that the time and place of meeting be also left to the wishes and best judgment of the section or district in which it is to meet. Surely no one would desire to go to New Orleans in the heat of summer, or to Maine in the depth of winter. I think, too, that we should always have some one at Washington to take care of our archives, etc., who could act at the same time as corresponding secretary, so that the whole world might always know where and to whom to direct any communication to our national organization.

As the consummation, after this organization shall have gotten into good working order, I would have permanent

sections, embracing the different subjects pertaining to the science and art of dentistry, formed of a limited number of life memberships, and selected upon merit alone,—scientific attainment and artistic skill. I would have these positions the posts of honor, and would offer them as a reward to the diligent and meritorious. Such a badge of distinction would be the highest award our profession could boast, and would stimulate young men to labor assiduously and persistently in some one avenue of science or art, hoping in the end to win and wear this honorable distinction. It would become the goal of the highest aspirations.

I have thus briefly given you a general outline of the principles upon which I think this grand national organization should be formed. But the organization itself will depend upon the report of your committees; the detail and minutiæ of government will have to be mapped out by these same committees, and I know and feel that it will take much time and careful consideration to bring everything into harmonious and proper working order. The question of membership is also to be considered and decided upon. If it can be so arranged, I think it most desirable to have our membership consist of delegates from State societies only. This would compel every State to form a State society or lose its representation; but I would prefer that all members of State societies should have the privilege of membership in this national body.

The Southern Dental Association met in July, in Augusta, Georgia, and has carried out in good faith its agreement with this convention to unite with it in forming a national organization, and has appointed the first Tuesday in September, 1880, to meet with you in the city of New York for the purpose of consummating this great scheme. The president, Dr. Patrick, of Charleston, South Carolina, has plenary powers to appoint the necessary working committees, etc. I learned on Monday that the American Dental Association has also appointed a committee (two of whom are present with us,—Prof. Pierce, of Philadelphia, and Dr.

McKellops, of St. Louis) to confer with our committees on this subject. We have a committee to appoint to aid in this great work, and I can only say, where so much is at stake, that I most sincerely hope that the members of our committee will be most carefully selected,—men of enlarged views, good judgement, intelligence, energy, and free from prejudices. All these qualifications will be necessary for this Herculean task.

I thank you for your very kind attention, and most sincerely hope that our fondest expectations in regard to this great undertaking may be fully realized at our ratification meeting on the first Tuesday in September, 1880, in the city of New York.—*Dental Cosmos.*

ARTICLE IV.

Strengthening Weak Teeth by Heavy Gold and Screws.—The use of Smooth Convex-Face Fillers.

BY GEORGE A. MILLS, BROOKLYN, N. Y.

Read before the New Jersey Dental Society, at Long Branch, July 17, 1879.

From an experience and observation extending over a period of several years, I have become convinced that this matter has not received from our profession the attention to which its merits entitle it. I think the principal reason of this is, that *the real value of teeth* has not yet been fully appreciated.

A patient brought to the necessity of wearing an artificial denture has passed an unfortunate line, and one that cannot be recrossed. Just now, while I am writing, I am informed that one of New-York City's most eloquent preachers—one who has electrified thousands in the church and lecture-room—is a sad example of this foreign invasion. I learn that the cause of his ruined pronunciation is a set of artificial teeth, and that he does not dare open his mouth freely for fear that they would drop from it; and they were inserted by one of New York's (so-called) best dentists.

To be sure, this case does not prove that all artificial dentures are failures; but it does prove that it is a great misfortune to be obliged to wear them. It was not necessary for him to have lost these teeth. They were lost because of the so-called "Rigg's disease," and, in such an organization as I personally know his to be, they were amenable to treatment.

Now to my subject. Let us take for example a lateral incisor—pulpless, decayed on both proximate sides, and involving most of the palatal surface. We will see at a glance that this is a very weak tooth. Now, to fill this according to the common method—replacing the portion destroyed by caries—would not add much to the strength of this weakened organ. Though such an operation is not infrequently made, yet too often it proves a failure, and the tooth is eventually lost.

I hold it to be a great failure of judgment to make such operations without the use of the strengthening auxiliaries which I have referred to in the heading of this article. The first step to be well considered is the preparation of the tooth for the operation, from the mechanical stand-point. After the health of the tooth has been provided for, we proceed to fill the root with cement; then, selecting such size and length of screw as are most suitable, enlarge the pulp canal to the depth required to retain it firmly; in many cases the length of it may be left undermined until near the completion of the operation. Platinum and iridium are the best materials to secure stiffness.

Having set the screw in the tooth (one as a rule will suffice for a lateral,) we so prepare it that direct access can be had and force applied in a line with the tooth. Then make grooves or slots at the base or the cervical part of the structure, in which to commence the operation we have in view. This step is by no means of the least importance, but is one of great nicety, in which thoroughness is demanded, for at this point strength must be secured. This is gained by the use of the screw, together with heavy gold.

Too many delude themselves with the idea of gaining strength with light forms of gold at the base. Is it reasonable to suppose that these, however nicely manipulated, can give the strength that Nos. 40, 60, or 120 rolled gold will secure? I do not think any mechanician will be in doubt as to which should be used.

We will now proceed to pack in these prepared places strips of 120 rolled gold (more often that than any lighter number.) Cut these pieces of gold nearly corresponding to the diameter of the place they are to occupy. Pack with a heavy lead mallet in the hand of a careful and trained assistant. I use a smooth convex face filler, and am able literally to swage the gold into the form of slot described. Can any one conceive of such perfect adaptation, solidity, and strength so easily gained in any other way? On this base we begin our work, and proceed rapidly, observing extreme faithfulness in placing all portions of the material properly, thus restoring the lost form of the tooth,—either moulding the contour carefully as we progress, or else simply giving sufficient shape to it, so as to be able to form it afterwards in the finishing process. The use of convex fillers of proper shapes enables us to draw or strap the heavy gold firmly over the edges, securing the great advantage of the swaging principle, unequaled, I think, by any other.

If we have properly prepared this tooth, we have labial and palatal plates of enamel separated, and the screw extending down nearly or quite to the cutting edge. We have followed the proximate edges carefully, and arrived at a point where we must gain additional strength by clasping, so as to secure these plates from the possibility of being torn apart by the strain they will naturally be exposed to. This has been provided for by cutting off a line or more of the cutting edge of the tooth, which we now replace with gold. This completed, as it *can* be (or as Dr. S. G. Perry, of New York City, would say, "as it *should* be,") we are ready to finish with the help of disks, sand-paper, and the usual pol-

ishing materials, leaving a dead finish. This accomplished, we have but little exhibition of gold, and certainly a very substantial piece of work. As a rule, we have performed this operation (including the preparation) in about two hours, and not necessarily with a great amount of physical force expended by either the patient or operator.

I have selected a lateral incisor as an extremely weak tooth, coupled with the conditions named, viz., loss of structure and of the pulp. It must be apparent to any dentist of experience that to have confidence in such operations, as well as to fully appreciate the value of them after they are made, it must have been gained by a practice involving not a few defeats; but it is proved in many instances that the elements of success are found in these. I shall contend that such operations are of more value in such cases than any other, as a general rule, and that in utility, comfort, facial appearance, and durability they are superior to any artificial crown set upon roots. The effort should be to conserve all of the original structure compatible with the greatest amount of utility, and each operator will be governed by the standard of his own judgment and experience.

The auxiliaries of which I have spoken (screws and heavy gold) will find a very practical application to many other operations. It is quite common to find the bicuspids in a condition requiring them. If the pulp be lost, the loss of tooth-structure by caries extensive, and the cusps remain, either cut them off sufficiently or so prepare them that they may be safely secured. It has been said that heavy gold was necessarily a brutal thing to use. Such comments only give evidence of not understanding how to use it intelligently. I give the preference to rolled gold, knowing it to be better adapted to these uses; there is a tenuity to it that is not so perfect in the beaten gold.

It will be noticed that I have also given preference to my smooth convex-face fillers; this I do purposely, for by a constant use of them in general practice since June, 1870,

I have gained an experience that has brought to me *absolute knowledge* of their value. While they have been brought into quite extensive use, I am considerably surprised that a greater number do not perceive the mechanical principle involved more readily. Since introducing them to the profession, the same principle has been applied to the instrument used for caulking ships, and a royalty of 25 per cent. is paid to the inventor for all such tools manufactured for that purpose. Several dentists have applied the principle to fillers of their own especially favored forms. Dr. A. H. Brockway has a set of his own devising with the convex-face, as has also Dr. Knowles, of California.

I think it was in 1874 that a notice was published in the *Dental Cosmos*, signed by the chairman of the Committee on Operative Dentistry appointed by the American Dental Association, requesting information concerning improved methods, instruments, etc. I wrote out fully the history of these fillers, and described their use, principles, and value, forwarding it to the committee; but, to my surprise, when the report of the association appeared in print, not a word of reference to my contribution was embodied therein. Instead of that, a set of instruments was made mention of, designed by another dentist, with the same principle applied.

It has occurred to me that if I should use the term "gold caulkers" to these fillers the principle would be better understood by many, for in filling they are used literally for caulking gold into the cavities, slots, and crevices. As applied to heavy gold on the margins and beveled edges, they swage or strap it perfectly to the form of tooth-structure. Dr. Fletcher, of England, found in his efforts to produce water-tight fillings with cohesive gold, that he only succeeded by the use of the same principle (the round-faced filler, as he termed it, and so published it this year.) I have, for accommodation, had S. S. White apply the Varney serrations to my instruments, and find that the principle is still valuable to a considerable degree; but the fullest ad-

vantages are secured by keeping them smooth, for then the gold can be better adapted to the form of the tooth.

My purpose in putting these views before the profession is, that it may stimulate those who are ambitious to excel in that which costs more than the ordinary effort, and thus secure to our patients a greater amount of actual service, personal comfort, and satisfaction.—*Dental Cosmos.*

ARTICLE V.

Consumption.—Drinks, Food, Bathing, Exercise, Clothing and Treatment in Consumption.

BY JAMES H. SALISBURY, A. M., M. D., CLEVELAND, OHIO.

I. *Drinks.*—Drink half a pint of hot water one hour before each meal and on retiring, for the purpose of washing out the slimy, yeasty, and bilious stomach before eating and sleeping. Drink a cup of clear tea, coffee, or beef tea (the latter free from fat) at each meal. During the interval, between two hours after and one hour before each meal, drink hot water or beef tea, if thirsty.

II. *Food.—Meats*—Eat broiled beef-steak, which has been entirely freed from fat and bone. Have it seasoned to taste with salt, pepper and butter. For variety, use broiled chicken, broiled game, oysters, roasted in shell or broiled, broiled lamb or mutton (lean,) broiled cod fish (fresh and salt,) broiled and baked fish free from fat, and broiled dried beef, chipped thin and sprinkled over beefsteak. A soft boiled egg may be taken occasionally at breakfast with the meat, if it does not heighten the color of the urine.

Bread.—Bread, toast, boiled rice, cracked wheat or oat meal mush may be eaten in the proportion of one part (by bulk) to from *four to six parts* of the meat. The bread should be free from sugar and raised with yeast. It may be made from gluten flour, white flour, or Graham flour; corn meal should be avoided.

All things not previously enumerated, and the following articles of food should not be eaten, viz.: Beans, soups, sweets, pies, cakes, pickles, sauce, preserves, fruits, vegetables, greens, pancakes, fritters, crullers, griddle cakes and mush. Vinegar should also be avoided. Use butter, pepper and salt for seasoning; also use either Worcestershire or Halford sauce, mustard and horse radish, with lemon juice on meats if desired. Celery may be moderately used as a relish.

III. *Baths.*—Take a soap and hot water bath twice a week for cleanliness, after which oil the entire body, rubbing in well. Every night sponge the body and limbs with one quart of hot water, in which put from two to four teaspoonfuls of aqua ammonia; after which rub well and wipe dry. Every morning, sponge off with a little hot water, wiping dry and rubbing thoroughly.

IV. *Clothing.*—Wear flannel next the skin, and dress comfortably warm. Change all clothing worn during the day, on retiring, so that it may be thoroughly aired for the following morning. Keep the clothing sweet and clean, by changing every other day.

V. *Exercise.*—Ride daily in the open air as much as possible, without fatigue. If not able to ride, the body and limbs should be rubbed and pounded all over for ten minutes morning, noon and night, by some one who has sufficient strength to do it thoroughly.

VI. *Meals.*—Meals should be taken at regular intervals, and it is better not to sit down at a table where others are indulging in all kinds of food. Eat alone, or with those only who are on the same kind of diet. After the system gets in good running order, which is indicated by the urine flowing at the rate of three pints in twenty-four hours, and standing constantly at 1.020 density, the appetite becomes good, and usually more than three meals a day are desired. This desire for food should be gratified by allowing the patient a nice piece of broiled steak, with a cup of clear tea, coffee, hot water, or beef tea midway between breakfast and dinner, and dinner and supper.

VII. *Treatment*—Before each meal, the patient should take a small dose of some good tonic. If there is a softened state of the tissues of the lungs, endangering hæmorage, something like the following would be a good tonic:

℞. Fluid extract pyrus malus radice............℥iij.
" " witch hazel.....................℥iiss.
" " cinchona comp..................℥iiss.
" " ginger.............................℥ss.
" " yerby santa.....................℥iij.
" " grindelia robusta, comp......℥iiss.
" " sundew...........................℥j.
" " water fennel seed...............℥j.
" " orange peel.....................℥ss.
al. menth. pip. gtt. xx.; al. winter green, gtt. xij.

M. S.: Take a teaspoonful in water before each meal. If the disease is complicated with chronic diarrhœa or consumption of the bowels, something like the following would be appropriate:

℞. Fluid extract cranesbill.......................℥iiss.
" " ginger.............................℥ss.
" " witch hazel.....................℥iiss.
" " pyrus malus radice............℥iij.
" " ampelopsis.......................℥j.
" " yerby santa......................ʒiiiss.
" " orange peel......................℥ss.
" " winter green....................℥ij.
" " chinchona comp................℥ij.
al. menth. pip., gtt. xv.

M. S.: Take a teaspoonful in water before each meal.

Immediately after each meal, should be given either 8 grs. of pepsin, 8 grs. of lactopeptine, or 8 grs. of pansaline. This latter remedy is composed as follows:

℞. Boudalt's pepsin............℥j
Pancreatine..................ʒiij
Phloridzine. ....ʒiij
Lactic acid..................ʒij. M.

To sweeten the stomach and bowels and also aid in checking diarrhœa if there is any, give:

℞. Carbolic acid (pure white crystals).........ʒss.
Aqua, ℥viij, al. menth. pip..................gtt. x.

M. S.: Take teaspoonful in a little water fifteen minutes after each meal.

To assist in making blood or to tone up the enervated nervous system, the following is a very good pill:

℞. Pil. phosphorus............(1–100 gr.)
Strychnine.................(1-100 gr.)
Iron.........................1 gr.

S.: Take a pill two hours after breakfast or dinner.

To invigorate and to improve the condition of the mucous membranes throughout the digestive tract, and to so tone up the throat and fauces as to prevent taking cold at every slight exposure, take the following:

℞. Spts. ammonia, aromatic............℥viij.
Salicin...................................℥ss.

M. S.: (Shake well before taking)—Dose:—Take from one-half to one teaspoonful in a wine glass of water one hour after each meal.

If there is a constipation of the bowels, use the mildest means to stimulate their muscles and glands, so that they will move once every day about breakfast time if possible.

The following external applications will be found useful:

℞. Emplastrum belladonnæ.
(Spread with the alcoholic extract.)

S.: Apply to chest.

If there is danger of hæmorrhage, provide the patient with an atomizer and a weak solution of persulphate of iron (1 drachm to 8 ounces of water) and instruct him to have the apparatus in readiness, so that as soon as there are indications of blëeding, to inhale at once the spray of this mixture. It will check the bleeding in a few minutes.

℞. Salzburg porous plasters...........two

S.: Apply one over bowels and one between the shoulders.

If the directions here given are faithfully followed out and persisted in, consumption *in all its stages* becomes a curable disease.

All anodynes, that get the stomach out of order, are to be rigidly avoided. The cure is accomplished by getting the system in splendid condition, when the urine becomes clear and flows at the rate of three pints daily—standing at 1.020 density; the appetite becomes enormous, so that from two to four pounds of nice lean beef are eaten daily with a relish.

The chills, fevers and sweats, grow lighter and lighter, and finally cease entirely; the blood-making process goes on rapidly; the blood vessels fill out; repair of tissues begins and goes steadily on; the eyes brighten; the cough gradually grows less and less; interstitial death, decay and disintegration of lung tissue ceases; the glow of health pervades the entire organism, and step by step the patient (if he perseveres) advances safely and surely toward health, which to reach only requires patience and the rigid observance of the rules here laid down. To accomplish this, the diet and treatment are to be closely and conscientiously carried out in all their details, with the soul and body of the patient enlisted in the good cause. Of course it takes time; for nature, after all does the work, and consequently all the changes must be physiological, and only as rapid as the human machine—when well run—can organize and repair. The physician must know precisely what to do, and do it. He must watch his patient daily, examining excretions, secretions and blood carefully and see that every part of the programme is faithfully and honestly carried out.

Any deviation from the right course can be detected at once, by an inrcease in fermentation, consequent biliousness, heightened color of urine and aggravation of cough, and all the other pathological symptoms. Patients cannot deceive the skilled physician in this field of positive work. If the directions are all rigidly followed the machine will soon get to running nicely and continue to do so, till thrown off the track by departures. These departures should be detected and corrected at once, or the patient begins to lose ground. No one need hope to handle consumption successfully

simply by change of climate and medicine. It is a disease arising from continued unhealthy alimentation, and must be cured by removing the cause. This cause is fermenting food and the products of this fermentation. Carbonic acid gas, alcoholic and vinegar yeast and vinegar, are the important factors in developing the peculiar pathological symptoms, conditions and states in this dangerous and generally believed incurable complaint.

Consumption of the bowels can be produced at any time, in the human subject, in from 15 to 30 days, and consumption of the lungs inside of three months by special exclusive and continued feeding upon the diet that produces them.

The foregoing are a few pages from the work on *Consumption* which I have had for some time ready for publication. I have been treating this disease successfully for the past twenty years, and have had under my care during that time over one thousand cases. I have simply to say that the disease is so thoroughly worked up in all its details that I am able to produce it at will and as surely cure it. This any one can be satisfied of, by coming and watching the patients under treatment.— *Virginia Med. Monthly.*

326 *Euclid Avenue.*

ARTICLE VI.

A Singular Case.—Extrusion of Bicuspid.

BY PROF. HODGKIN.

Mr. C. brought in his little boy of five and half years, stating that he needed some extraction done. On examination it was seen that the six-year molars were erupted above and below. The crown of the first temporary molar left upper was gone, the roots remaining in position but loose. On the first casual examination I saw what I fancied was the buccal root of this tooth pushed out through the gum, as is seen occasionally when teeth are in process of eruption—the outcoming tooth pressing the root laterally out and through the process. But on a more carefu inspection i

was seen that the appearance on the buccal aspect of the alveolar ridge was the *first bicuspid*; the crown fully formed but minus the root. This tooth was clinging slightly to the gum, by its lingual face; the upper or root aspect entirely exposed, and funnel shaped, as is usual in these partly developed cases. The adhesion to the gum was so slight, and its dislodgment from its socket so complete as to render only the finger nail necessary for its removal. The pulp was of course gone and the cavity empty. No examination of the jaw was allowed to discover if any growth had forced this tooth thus early from its place, though no evidence of trouble was present to sight. Why was this bicuspid thus thrust out of its socket laterally, and protruding wrong end foremost from the alveolus?

EDITORIAL, ETC.

The Salisbury Treatment of Consumption.—We make no apology for the publication of this paper. With over one-fourth of our adult population dying of phthisis, it is an object to increase the general interest felt in any method which may lead to better results in the treatment of this fearful and yet so common malady. So many dentists become consumptive that we are sure the readers of this *Journal* will be glad to know of a method which, by food only, is proving itself a success.

To test the question thoroughly, Dr. E. Cutter, of Boston, whose original papers of late have aided in filling these columns, himself a steadfast believer in the food treatment, has established a "sanatarium" near Boston, and solicits the aid of physicians in the procuring of cases. Those who send him chronic cases of consumption will be constituted a committee to whom he will report results in six months, *themselves to be the judges of the success or failure* of the treatment. Dr. Cutter is in this acting disinterestedly, and wishes to test this matter thoroughly; with of course, all confidence in its success.

If any reader of this *Journal* suffering from pulmonary disease, desires the comforts of a home, and treatment on principles seemingly thoroughly rational, let him write to Dr. C. at 94 Tremont Street, Boston. This notice is entirely unsolicited on his part, and written as a felt duty to the many hopelessly perishing. H.

In the report of section VI, Metallurgy and Chemistry of the Metals, the committee say:

"The section desires to present at this time to the Association three conclusions:

1.—That pure gold introduced into a tooth as a filling is inert and *of itself* exercises no electric or galvanic action on the tooth.

2.—That while amalgam fillings conform to the general shape of the cavities, the surfaces of the fillings do not fit closely to the surfaces of the cavities, but are rough and uneven or indented, the indented or depressed portions not coming in contact with the dentine, thus being liable to leak, and in fact a very large number do leak.

3.—That plastic fillings into the composition of which chlorine enters, cannot be relied upon as permanent; first, because of the great affinity of chlorine for alkalies. Second, because the other constituents of the filling have greater affinity for other acidulous agents than for chlorine,—these affinities bringing about a disintegration of the filling."

These statements and conclusions are in broad variance with the "new departure;" and a new theory—that of *destructive alkalinity*,—broached. Will the authors of this paper please furnish the public the grounds on which they rest their belief, and the steps by which such conclusions are arrived at?

H.

Missing Numbers of Journal Wanted.—Twenty-five cents each will be paid for the following numbers of this series of this Journal: March, 1872; April, 1872; June, 1872; November, 1872; November, 1874; November, 1875; January, 1878; March, 1878; July, 1878; October, 1878.

J. B. HODGKIN.

BIBLIOGRAPHICAL.

Treatise on Dental Caries: Experimental and Therapeutic Investigations.— By Dr. E. Magitot, Laureate of the Institute of France, etc., etc. Translated by Thomas H. Chandler, D. M. D., Harvard. Boston, Houghton, Osgood & Co., 1878.

This volume of 275 pages was received from the publishers some months ago and briefly acknowledged. The illness of the writer prevented at that time the careful reading of the book which it was felt its merits deserved, coming as it does from so distinguished a source; and not until the present has time been found to give it the patient attention it should receive.

This is a small book. Such an one as an American would most probably turn out, as to size, in a few weeks at most. But it bears from beginning to end the marks of that slow, patient, careful procedure which it has seemed to us is characteristic of continental foreign investigation. And this seems to be a merit we are slow to appreciate in our land of hurried ways and premature conclusions. Dr. Magitot leaves no department of the subject of dental caries uninvestigated which is capable of investigation with the lights we have, and at the same time he is modest, yet decided in pronouncing his conclusions.

After a brief statement of his belief as to the origin of dental caries, in which he asserts that in this malady "a chemical alteration" of the associated elements of the tooth takes place, resisted by the vitality of the organ and thus more or less delayed, he summarizes the opinions and beliefs of the earlier writers upon the subject, making mention of the three doctrines held as to the etiology of caries: the inflammatory, the purely chemical lesion, and the compound theory of M. Oudel, of two kinds of caries. He proceeds to divide the work into—

"First, Pathological Anatomy or study of the Lesions of Dental Caries, preceded by a rapid survey of the normal anatomy of the organ.

Second, Etiology and experiments.

Third, Progress, Symtomatology, Complications.

Fourth, Nosology and Diagnosis.

Fifth, Treatment.

Sixth, Finally, after a short resume, we shall give, in the form of aphorisms, a series of conclusions resulting from the whole of our study."

These propositions as introductory, are followed in the first chapter by a resumé of the anatomical structure of the dental organ, exceedingly clear and perspicuous, in which the ground is taken that there is a true "organic movement"—a sort of circulation in the dentine, by which the tooth is nourished. The walls of the canaliculæ have, he states, no trace of organization. The tactile sensibility of the teeth he thinks due to vibration, and not to any peculiarity of structural organization. More stress is laid upon the existence and functions of the membrane of Nasmyth, the "enamel cuticle" of Kolliker, than is common with us. The statement (p. 25) that the dental pulp in old age disappears, requires further proof. It stands here simply as a statement, though the fact may be an exceptional and isolated one. Hypertrophy of the alveolo-dental periosteum in the aged, is given as a cause of loss of the teeth in advanced years.

The discussion of the progress of dental caries is exceedingly careful and discreet, the author showing step by step the various stages with a delightful clearness. The "zone of resistance" is beautifully delineated in the plates which accompany the book. We are, however, not at all satisfied with the cause of the so-called "friction cavities," which Dr. Magitot claims are simply carious spots passed into the condition of spontaneous cure. This, in the location of some of these spots now under observation, is simply impossible, nor is it likely as he claims, that the "entire pulp may disappear under the progressive invasion of the secondary dentine." Stress is laid upon the fact that in active carious conditions, the cavity and its walls have always an acid reaction, while those that have passed into the condition of "dry caries" are alkaline or neutral. No importance is attached to the presence of leptothrix-buccalis in the mouth as a factor in caries; and the grave changes in the condition of the pulp incident to exposure, seem to point to

too serious lesions to admit of recovery by treatment or capping.

The second chapter of the book is devoted to, first; the predisposing anatomical conditions and the constitutional causes of caries; second, the role of the saliva considered as the agent of the production of caries; third, the production of artificial caries by direct experiment; fourth, the mechanism of the production of dental caries. In this discussion the anatomical defects of enamel are conspicuously displayed as factors in the production of caries; and indeed, considering the fact that defects of the enamel are apparently wanting in many cases as a cause, this theory is put almost too prominently forward. The elucidation of the causes of erosion is well made, and no one can find fault with the methods by which our author arrives at his scientific conclusions, nor with the law laid down by him, that those teeth are "most predisposed to caries which accomplish their evolution and eruption at that period of infancy most disturbed by diseases, so that in a general way, the conditions of the health always governs, in a certain degree, the constitution of the teeth." The tabulated results of his observations in ten thousand cases of dental caries, are a worthy addition to the statistics of this subject. He finds, however, what does not seem to coincide with common observation in our country, that slight, if any difference exists between the sexes in the proportion of loss of teeth from decay. The influence of drinks, both of water and of acidulated fluids, cider, etc., are discussed with negative conclusions, and heredity is brought forward as an important factor in determining loss.

The best grouping of races we have seen in any book is made by Dr. Magitot, in comparing tendencies to loss of teeth, yet he does not claim that sufficient data are accumulated to base conclusions upon. The conscript tables of France furnish him with figures of value as localizing dental caries, and he seems to find certain districts much more subject to attack than others; but he concludes that the cause is not climatic or due to habit, but to heredity. The Celtic race he claims have good, the Cymric race bad teeth; and much stress is laid on the temperaments thus inherited. No importance is given to the theory that the teeth of pregnant women are robbed of their lime salts to

nourish the fœtus. But the doctrine most strongly brought out—*the* doctrine of the book, is the effect of the saliva upon the dental organs. Dr. Magitot is here emphatic even to dogmatism, in asserting that "the saliva is the veritable agent of caries;" and that this agency is due to "the variations its composition undergoes under diverse influences." The section on the study of the saliva is careful, and the veiws seemingly matured with thought from a mass of special experimentations. No one can read this chapter without profit.

But we linger over this book with delight, and must close. The student who takes it up in the hope that it will prove a practical treatise on operations will, of course, be disappointed; but to one who wishes to go back of and beyond the domain of operations into the field of faithful study of the causes of the malady he is daily called upon to treat, cannot fail to be fascinated and charmed as well as instructed.

The table of general conclusions at the close of the book all may not agree with, but that it is the result of a more careful study of this subject than has hitherto been given it, must certainly be granted. The index of illustrations, etc., is very full, and the special index of subjects elaborate. The whole book is a nice one, and we commend it to the students of our colleges who wish something more than the ordinary text-books contain. Dr. Chandler has done his work as a translator quite well, but it is unfortunate that he has translated so literally. The terms resection for removal of superficial decay, obturation for filling, etc., do not add to the value of the book, and sound oddly to American ears. H.

American Academy of Dental Science.

The annual meeting of the American Academy of Dental Science was held on Wednesday, October 29th, at Hotel Brunswick, Boston. A very excellent address was delivered by Dr. C. A. Marvin, of Brooklyn, N. Y. The following officers were elected for the ensuing year: *President*—J. L. Williams. *Vice President*—T. H. Chandler. *Recording Secretary*—J. T. Codman. *Corresponding Secretary*—C. P. Wilson. *Treasurer*—L. D. Shepard. *Librarian*—H. F. Bishop. *Censors*—E. G. Tucker, G. T. Moffatt, F. N. Seabury.

C. P. Wilson, *Cor. Sec'y.*

MONTHLY SUMMARY.

Artificial Palate.—Dr. Erastus Olin writes: W. F.———, Act, 15, consulted me, in Dec., 1873, in reference to a cleft in his mouth, extending through the hard and soft palate and alveolar ridge. •There was an overlap on one side of the cleft only, the hair lip having been treated early in life.

To be brief, only three natural teeth have made their appearance in the superior maxillary, namely: two molars on the right side, and one on the left. Moreover, there is neither vomer, uvula, or palato-pharyngeus. I therefore made an ordinary upper denture of seven teeth, and continued backwards from its posterior border, an artificial velum of elastic rubber. To my surprise, the voice of the patient was quickly changed from a nasal twang to a bass key.

These cases require great pains-taking. Otherwise, failure will be the result.

The Relation between the Age of the Mother and the Sex of the Child.—Dr. Bidder, in the *Zeitschrift fur Geburtshulfe und Gynakologie*, Band 2, gives the results of his observations in this subject. In 4441 primiparæ the proportion was 100 female to 111.5 male children. Very young primiparæ gave birth to a large proportion of boys; those of twenty or twenty-one years old had more girls than boys: while as the age increased the proportion of male children again arose. In 7430 multiparæ there were 100 female to 112.4 male children. The proportion of males exceeded that of females in those aged from seventeen to twenty-one; the number sank in the twenty-second and twenty-third years, reached its minimum at the ages of twenty-four and twenty-five, and then again increased in proportion to the age of the mothers.—*Med. and Surg. Reporter.*

Steel Rust.—According to the *Chemiker Zeitung*, articles of steel which have become rusty may be cleansed by brushing with a paste made up of 30 parts of cyanide of potassium, 30 parts curd soap, 60 parts of precipitated chalk, and a sufficiency of water. Great care is required in preparing and using this poisonous mixture.

Nickel Plating Without a Battery.—The *Engineer* publishes Prof. Slatba's new unpatented process for nickel plating in the wet way without the use of a battery: To a dilute solution of chloride of zinc (five to ten per cent.) enough nickel sulphate is to be added to impart a decidedly green color to it, and the solution is then to be heated to boiling in a porcelain vessel. The clouding of the liquid from the separation of a basic zinc salt need not be heeded, as it will not interfere with the effectiveness of the bath. The articles to be nickel plated are first freed from oxide or grease, and then suspended in the solution from thirty to sixty minutes, the bath being kept at a boiling temperature. When the articles are observed to be uniformly coated they may be removed, washed in water, in which a little chalk is suspended, dried, and finally polished with chalk or other suitable material. By the substitution of a cobalt salt instead of nickel, objects may be similarly coated with cobal.—*Pharmacist and Chemist.*

Tobacco Smoke.—The authorities of several German cities, says *Chambers' Journal*, have been seriously considering the evils resulting from smoking, now so generally practiced by boys. In certain towns, the police have been ordered to forbid all boys under sixteen to smoke in the streets, and a punishment by fine or imprisonment is meted to offenders. It has been the testimony of several eminent physicians that the too general and excessive use of tobacco is the main cause of color blindness, now occasioning such great anxiety from its influence upon railway and other accidents, and also upon military efficiency.—*Pacific Med. and Surg. Journal.*

Sugar and Teeth.—The *Medical Journal* of Charleston, S. C., thus stated the conclusions of M. Lerez: "1st. Refined sugar injures teeth—either by immediate contact, or by gas developed in the stomach. 2nd. That a tooth soaked in sugar-water becomes jelly-like, from the sugar combining with the lime of the tooth."—*Dental News.*

Artificial India-Rubber.—A mass said to resemble India-rubber and soluble in linseed oil, may be prepared by heating in an iron kettle, which should be only half filled, ten pounds of sulphur and twenty pounds of rapeseed oil, with constant stirring until the sulphur has been melted and the mass begins to swell; then immediately pouring it into a mould, dusted with some kind of powder, or upon a slab moistened with water, when it will harden at once. Linseed oil may take the place of rapeseed, when less sulphur must be used.—*Druggists Circular.*

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ARTICLE I.

Dental Fallacies.

BY JOHN J. R. PATRICK, D. D. S.

[An address delivered before the Missouri State Dental Association, held at Sweet Springs, June, 1879.]

The paper which I have the honor to present to you this evening, will embrace but a small part of a large but unexplored field, and will simply aim to point the way to others who may feel disposed to investigate the truth or fallacy of the "Degeneracy of the Human Teeth." I know, gentlemen, that you are well aware of the deficiency of information possessed by intelligent people, as well as the lack of knowledge by our medical brethren in regard to the errors connected with our profession.

In the discussion of this subject it will be necessary to examine some of the fallacies which the literature of our profession discloses, because it is from this class of literature alone that we must look for the most disastrous results when in error, and for the greatest good when strictly scientific. At the outset it will be necessary to ascertain, if possible,

the origin of the general belief in the degeneracy of man, including his teeth. Long before science arose to deal with this subject, this belief in degeneracy became enwoven with our history, our habits and our creeds; all the errors in regard to diseases with which man appears to be afflicted, rests on the Mosaical account of the fall, which was only meant to account for the apparent disorders existing in nature. A teleological idea which is essentially bound up with the other idea—that man was created in order that the world might not be without some intelligent creature who could appreciate it. But the countless ages that elapsed prior to the appearance of man is a sufficient answer to the philosophical theories of final causes.

We can trace the spirit of this doctrine of degeneracy through successive ages down to our own time. It has been maintained and defended from every pulpit and rostrum in Christendom, and forms the basis of all opposition to every advance in every department of natural science, especially those branches which relate to Anthropology or the science of man. Like predestination in Ethics, it has a constant tendency to paralyze every intellectual effort. These opinions are simply dogmatic and traditional, held by this man because it has been held by that man, a generality of assent, which means but little more than a multiplicity of credulities. There is nothing so servile as the human mind in the presence of established or received opinions, and this condition is not confined to the uneducated in the delicate art of observation, for men of eminent culture find great difficulty sometimes in seeing plain facts when they come in conflict with their preconceived notions. But the questioning spirit of modern science demands more than a mere belief. It requires a careful classification of existing facts and their relations to each other. It scorns to float on the stagnant pools of common opinion; it demands facts, numerous and plain, and the conclusions from them inevitable. These must precede all theories, all attempts at exposition; the verdict must come after the evidence, and

not before it. In the interest of science, therefore, it seems to me that some protest is now called for against the doctrine promulgated at this late date from so high and honorable a position as a professor's chair in one of our dental colleges. I allude to the opinions expressed in an essay written by Prof. Henry S. Chase, of St. Louis, on causes of the degeneracy of the teeth and published in a valuable little work issued in numbers by the publishing house of Estis & Lauriat, of Boston.

In this essay, the Professor asserts that foreigners who have been here only two or three years often go to the dentist and say, "My teeth are getting bad; they never decayed until I came to America. There must be something in the climate which injures them." He further says: "I believe that climate has nothing to do with decay. The savages who inhabited the State of Missouri one hundred years ago, or even fifty years since, had teeth perfectly formed and of dense structure and undecayed."

The Professor unfortunately fails to furnish any better reason than the foreigner, or any kind of proof but his simple assertion. He certainly did not examine the teeth of these savages, and he therefore was in duty bound to give some good reason for the statement. He states further: "I have in my possession a large number of teeth picked up out of the earth by *myself* five years ago from the bottom of a mound on the banks of the Mississippi which was being removed. None of these teeth bear marks of decay! The red man of the last three hundred years has always had the reputation of perfect dental structures." The reasons the Professor furnishes are as follows: The food and habits of these savages were simple and natural. A large number of isolated teeth (it would be desirable to know how many) picked up from the bottom of a demolished mound, and the bare reputation that the savage enjoyed for sound teeth, during the last three centuries, justifies the Professor in the conclusion that it was his natural mode of living that secured him the blessings of a sound set of teeth.

Hence, unnaturally prepared food and not climate is the cause of dental decay. The Professor again states that "the common field hands of the South usually had strong, well-formed and undecayed teeth; while the house servants were more or less afflicted with the toothache, like their masters and mistresses. The food of the field hands was simple; while that of the house servants was the reverse and more like that of the whites."

The Professor, in this statement concerning the negro's teeth, I am well aware is on the strong popular side of the question. The great contrast between the negro's skin and his teeth is a powerful factor in this legend; for a negro's teeth must be very dirty and bad indeed not to appear white to the casual observer. The color and prognathism of the true negroes, and the consequent obliquity of implantation of the incisors, together with a receding chin, gives to his teeth great prominence. In this particular he differs but little from all the other low types of mankind. But the field hands of the South and the house servants were two very different people—the house servants, as a rule, had more or less European blood in their veins, which together with association, made them more intelligent and better fitted for places of trust than their purer-blooded brethren of the field. Only so far as mixed races are more subject to irregularities of the teeth, did the house servants suffer more from diseased teeth than the field hands. Before our late civil war, the teeth of the house servants in the South were attended to as strictly and with as little regard to expense as the teeth of the rest of the family. Aside from other considerations, an aching tooth in the household, whether in the mouth of master, mistress or slave, was a very unpleasant association, and a recurrence was guarded against by a visit to the family dentist. The field hands, on the contrary, when afflicted, disturbed no one excepting a few sympathizing friends in his quarters, who furnished the patient with all the nostrums and charms of which they were capable, for the sufferer, in most cases,

dreaded the turnkeys of the plantation physician with a child-like horror. A visit to a dental office by a field hand was out of the question. A residence in the South before the war and a good share of Ethiopian practice (all extracting) justifies me in saying that the negro's teeth, beyond the age of twenty, are uniformly bad, and the mulatto's worse. If an examination were made to-day of all the negroes' mouths over forty years of age, by far the greater majority would be found approaching or in the condition of the venerable "Uncle Ned's," which has been recorded in that simple but pathetic ballad which bears his name. The Professor further states that people in the rural districts, one hundred years ago, had far better teeth than their descendants, and that when he was a boy, toothache was not common. Many persons eighty years of age had never lost a tooth. (Query: Did the boy examine the aged people's mouths in order to make this statement?) And he further states that Irish girls who come to this country for service usually have good teeth, but in two or three years their teeth decay surprisingly. This is easily accounted for (says the Professor) when it is notorious that they eat large quantities of food made from superfine flour, of which they rarely tasted in their native country. Armed with these unsubstantial theories, the Professor looks to other influences than climate for the degeneracy of the teeth, and finds the cause of all the mischief in the use of XXX superfine wheaten flour; so that the teeth of fine-flour eaters are defective, their children inherit their defective dental organization, and so the mischief spreads!

Happily for the *bone* if not the sinew of the country, unbolted flour is not the only source from which man obtains his supply of lime salts for his bone tissue. A very little reflection will show that there is more lime salts in solution in one quart of spring water, than can be obtained from the bran and short in one bushel of wheat. The water we drink and other food containing lime salts, will more than compensate the loss of bran and shorts taken

from the wheat by the miller. For my own part, I apprehend but little danger of the prospective American appearing eventually boneless and devoid of teeth. At least it must be shown that the average American lacks in bone tissue before this hypothesis can be entertained. It must be shown that the average Bavarian, who lives on rye bread and unbolted flour, has larger bones than the proverbially "raw-boned Yankee." There must first be proof that a calf fed on bran and shorts will have larger bones and teeth when grown than one turned out to grass. So long as the secretions of the body deposit calculi and carry from the system large quantities of lime salts, there need be no fears of succeeding generations becoming edentulous.

I am well aware that it is, and has been the fashion of the times to charge deterioration of man to the advance of centuries. It is safe to do so; it is also orthodox. "Man is growing weaker and wiser," says one. "People do not live as old now as formerly," says another. "My great-grandfather never wore spectacles," says a third. "My great-grandmother never lost a tooth, and she was over eighty," says a fourth. And yet if you were to ask either of the two last named the Christian names of either grandfather or grandmother, they would not be able to tell you. Yet they will profess to know the condition of their teeth and eyes. If this degeneracy of the human family were true, it ought also to be true of domestic animals, for the same laws which govern the physical condition of the one likewise govern the condition of the other. All animals placed in conditions favorable to their development increase in size, strength and beauty, and it cannot be otherwise with man.

Men of a purely classical education have contributed much to strengthen the belief in the degeneracy of man; they have a mania for measuring every species of excellence by a Greek and Roman standard, and are attached to the past by a ligature which they are incapable of severing. They are lost in admiration at the sagacity and almost

intuitive wisdom evinced in the writings of such men as Aristotle, Plato and Hippocrates, and having but a slight acquaintance with the progress made in natural science of modern times themselves, deem the superficial knowledge of the ancients equal if not superior to the moderns. Such a man is the Boston Demosthenes (Wendell Phillips)—"a man of swift and tuneful tongue," who has frequently treated the public, in form of lecture, to a plaintive lamentation over the lost arts. He has stated in this oft-repeated lecture that the teeth of Egyptian mummies have been found to contain gold fillings. This very important statement, if founded in fact, in the place of being drawn from the pen of some sensational newspaper reporter, would only prove that teeth decayed then as now; but I am far from giving the least credit to such a statement. Such marvelous theories might become a lawyer or an orator to sustain a false but popular lecture, but would poorly serve the interests of science, which has little to do with the dreamland of conjecture and speculation. I have watched the current literature on this question for several years, and the result has been to convince me that the prejudice which I am combatting is so deeply rooted in most minds, that it would be very difficult to meet the assertions made by members of our own profession, were it not for the positive evidence which I shall present to you this evening. The general literature of the past, as might be expected, furnishes as little on the subject of decayed teeth and toothache as the current literature of the present day. The Bible, for instance, speaks of teeth broken, teeth put on edge, and in the Jewish law of retaliation, the loss of one tooth is made to satisfy the loss of another. The nearest approach to a knowledge of bad teeth is shown in one of Solomon's love songs, where he compares the teeth of the subject of his inspiration to a flock of sheep that are even shorn and fresh from the washing; which simply shows that such teeth were unusual, or he would not have selected them as special objects of admiration. The Roman

satirical poet, Juvenal, who flourished about the seventieth year of our era, in his fifth satire, describing the common custom at Roman feasts of serving the guests according to their rank with fine and indifferent food at the same table, says:

> "The scoundrel hands the bread you scarce can break—
> Hard, musty lumps, which make the grinders ache."

To enumerate the many silly charms for the cure of the tooth-ache in the early history of medicine would extend this essay to an indefinite length. In the middle ages the saints were fearful enemies to the progress of the science of medicine. There was not a limb of the human body but had its special guardian saint; no disease, pain or accident but an especial saint was appealed to for relief, and aching teeth were well provided for. Saint Apollonia, Saint Petronilla and Saint Lusy were the celestial dentists.

Paracelsus, the great charlatan of Germany, who rose to such popular fame in the early part of the sixteenth century that he obtained the professorship of medicine at Basil, and whose remedies consisted principally of magic, astrology and geomancy, gave cabalistical words to be repeated for the cure of the tooth-ache. In the early part of the seventeenth century Bishop Hall, in one of his philippies against the ignorance of some of his enemies, says "that charms are their physicians, and they wear Paracelsian characters for the tooth-ache." In a satirical poem written by the same author occurs the following verse:

> "Or Gallia wore a velvet mastic patch
> Upon her temples when no tooth did ache."

A nail driven into an oak tree is a very ancient remedy for the tooth-ache, and is resorted to in the rural districts of Europe to-day. I had the good fortune to see the operation performed successfully by a Swiss before an admiring crowd of farm hands, and he declared to me, through his interpreter, that the remedy had never failed him. But by far the finest record of the loss of teeth and the existence of tooth-ache near three centuries ago, is to

be found in the works of that most illustrious of dramatic poets, William Shakespeare, for had tooth-ache and the subsequent loss of teeth not been a natural condition and a common malady, he, above all men, would not have mentioned it. I find in the comedy of "As You Like It," in the scene where the brothers Oliver and Orlando quarrel, the old servant, Adam, interferes, but is rebuked and called an old dog by the elder brother. To which Adam replies: "Is old dog my reward? Most true, I have lost my teeth in your service; God be with my old master, he would not have spoken such a word." In the same play Adam says he is nigh eighty years old. In the same comedy, act II, scene 7th, Jacques compares the world to a "stage—the men and women merely players; man in his time plays many parts," his acts being seven ages. The 7th and last scene, that ends this strange, eventful history, is second childishness and mere oblivion: *sans* teeth, *sans* eyes, *sans* taste, *sans* everything. In the 1st scene of the 5th act of the comedy of "Much Ado About Nothing," two old men, Leonato and Antonio (brothers) are introduced, Leonato grieving over the death of his daughter, who has been slandered to death by one Claudio. His brother, Antonio, proffers him consolation, to which Leonato replies: "I pray thee peace; I will be flesh and blood; for there was never philosopher that could endure the tooth-ache patiently." Further on in the same scene the two old men confront the traducer and challenge him to mortal combat, when it is stopped by the Prince of Arragon, and the two old men leave breathing vengeance. At their exit Benedick enters, and is informed by the Prince that he almost came in time to part a fray, and Claudio says: "We had like to have had our two noses snapped off by two old men without teeth." In the same play, act III, scene 2nd, Benedick (who is supposed by his companions to be in love) appears with the tooth-ache, when the following conversation takes place:

Benedick.—I have the tooth-ache.

Don Pedro.—Draw it.

Benedick.—Hang it.

Claudio.—You must hang it first and draw it afterwards.

Don Pedro.—What! Sigh for the tooth-ache?

Leonato.—Where there is but a humor or a worm?

Benedick.—Well, every one can master a grief but he that hath it.

Claudio.—Yet say I, he is in love.

Benedick.—Yet is this no charm for the tooth-ache.

In the tragedy of Cymbeline, the gaoler says to Posthumus: "Indeed, sir, he that sleeps feels not the tooth-ache."

In the comedy of the "Two Gentlemen of Verona," Launce produces a catalogue of the virtues and vices of his mistress, which Speed, another clownish servant, reads for him. Among the vices enumerated are the following:

Speed.—Item: she hath no teeth.

Launce.—I care not for that neither, because I love crusts.

Speed.—Item: she is curst.

Launce.—Well, the best is, she hath no teeth to bite.

In the latter part of the seventeenth century Dean Swift, in a satirical poem entitled "A Beautiful Nymph Going to Bed," gives a very minute description of all the artificial adornments in use in his day, and which his Nymph removes before retiring. In the catalogue enumerated is artificial teeth.

> "Now dext'rously her plumpers draws,
> That serve to fill her hollow jaws;
> Untwists a wire, and from her gums
> A set of teeth completely comes."

The poet Robert Burns bears testimony to the existence of decayed and aching teeth in Scotland in his immortal little poem an "Address to the Tooth-ache," written soon after the author had been tormented with that disorder. One stanza will be sufficient to show the author's appreciation of it:

> "When fevers burn or ague freezes,
> Rheumatics gnaw, or colic squeezes,
> Our neighbor's sympathy may ease us,
> Wi' pitying moan;
> But thee, thou hell o' a' diseases,
> Aye makes our groan."

Any person but slightly acquainted with European art must know that Dutch, German and Flemish painters have all given ludicrous scenes of tooth extraction, which is a sufficient answer in itself to that pleasing legend which foreigners are so fond of telling "That they never heard of bad or aching teeth in the old country." If this will not suffice, ask the barber-surgeons, the German ones; they who were licensed to practice their calling in Germany, and they will tell you that tooth extraction was included in the list of the operations they were qualified to perform.

The expression of firmness can not be depicted on the human countenance without the teeth, while their loss is the very type of feebleness. Painters, poets and sculptors at all times, in depicting or describing old age, have always portrayed their subjects without teeth. The sunken lips, protruding chin and drooping nose—no hard or fixed expression of firmness can be produced when they are gone; the face becomes flaccid and yielding, and this in proportion to the loss sustained in alveola, for if the teeth are lost early in life, the absorption becomes complete, and the result is the loss of the attachment of the principal muscles of expression. I do not feel it necessary to dwell further on the evidence capable of being brought forth from the literature of the historic period in support of the truths already presented; opportunity will be constantly afforded members of our profession, in the course of their general reading, to add largely to the evidence I have presented. Poor as the evidence may be that I have furnished from the writings of men, the evidence furnished by the remains of the prehistoric man is unmistakable, silent but eloquent in its silence, and beyond all controversy.

In the Academy of National Sciences of Philadelphia, there is a large collection of human crania taken from every portion of the known world. I refer to that magnificent collection made by Dr. Samuel George Morton. These shulls form the basis of his large work entitled "Crania Americana, or a Comparative View of the Skulls of Various

Aboriginal Nations of North and South America." I have spent some time with these human remains, and while they are very deficient in teeth, many being lost, there are enough remaining to show that tooth decay and the maladies consequent thereto was not uncommon with these different races of men. In a work on Human Anatomy, by Alexander Monroe, published at Edinburgh, in 1813, I find on page 352, vol. I, a table of measurement of British skulls where there were no teeth, and the alveolar completely absorbed. I have in my own collection of American crania taken from the mounds of the American Bottom in St. Clair and Madison Counties, Illinois, nearly one hundred well prepared skulls of the so-called mound builders, and it is the exception to find among the whole number a sound set of teeth. In obtaining this number of comparatively good crania not less than four hundred graves were opened, the rest being too frail to preserve. The marks of alveolar abscess are common; loss of molars and bicuspids are frequent, with complete absorption of the sockets. I have two cases of antral abscess, with loss of the external wall of the antrum in one of them. I have one case of entire loss of teeth, with absorption so complete that the mental foramina is obliterated and the nasal process entirely gone. I have a number of cases in which the crowns of the teeth are in all stages of decay; others with the fangs or roots remaining in the sockets, the crowns gone entirely. I have but two skulls in which the front teeth lap over each other; in all the other cases the masticating surface of the upper jaw fits perfectly that of the lower, and so with all the teeth that are not missing. The incisive te th do not lap, but impinge on each other at their cutting edges like the molars, and are worn quite flat, so that when we look along the surface of mastication we perceive that it is almost a perfect plane. This appears to be the case with all primitive races, for they eat their food in quite a different manner from what we do. There are, however, exceptional persons in modern times who use

their teeth in the ancient way. The teeth of the primitive man were used more for prehension than with us. Cuvier says, in his Comparative Anatomy, that the ancient Egyptians used their incisive teeth for the same purpose, for the incisive teeth of the mummies are all truncated, and with flat coronals. The teeth of the ancient British and Gaulish skulls are in the same condition. The introduction of the knife and fork or chopsticks in modern times, to convey food to the mouth, has no doubt modified the form of the jaws and the antagonism of the teeth.

Whatever may be said in regard to the difference of antagonism in the jaws of the ancients, the savages and the civilized man of modern times, there can be no difference of opinion as to the certainty of disease and death, for the evidence is beyond dispute that if there is a law in nature more constant than any other, it is decay and death, either in part or in mass. Every germ, in its development, meets with obstacles, meets with contending forces; so that countless millions of germs or seeds that are produced, rot before ripening and never come to maturity, and by far the largest number that do mature are warped, gnarled and twisted to such an extent that but few can be said to be in that condition which physiologists call normal. Constant, unrelenting and persistent are the contending forces which govern life; an excess of either one or the other must change and modify the character of the organism upon which they act; and the wonder is to the observant mind, not that nature does her work so poorly, but that she does it so well.

In conclusion, gentlemen, I desire to say that my only object in criticising the writings of others is prompted by an earnest desire to see the science of dentistry placed in its true position, alike beyond the reach of ridicule, fraudulent imitation and scientific dandyism.*

[*At the close of the essay a motion was made to examine the teeth of all the negroes in the employ of the Sweet Springs Company, and a committee was appointed for that purpose. The committee, after a careful examination of over thirty negroes, reported their teeth in a uniformly bad condition.]

ARTICLE II.

Justice—Injustice—the Ether Controversy.

BY PROF. HODGKIN.

A writer in a late number of *Johnston's Dental Miscellany* takes the remarkable position that the question of priority in the discovery of anæsthesia is unnecessarily revived, and that its merits were finally settled by an act of the Connecticut Legislature in 1847; and that any attempted reversal of that decision in the light of further evidence is ill-timed and possibly illegal. At least such is the inference one may draw from the remarks of this writer, who seems to think that because the new and complete evidence on the subject, which incontestably awards to Dr. Crawford W. Long the honor of being the first to use ether as an anæsthetic in surgery, comes from the State of Georgia, and is announced in a public way by a distinguished Georgia statesman, that therefore such evidence should be ignored. Although why such evidence should be slightly esteemed, he fails to inform any one.

Certainly because the Legislature of Connecticut in 1847 had never heard of Dr. Long or his discovery is no reason why his claims did not exist, nor is it any reason why they are not rightful. There has been an unfairness and disingenuousness about all this matter utterly unworthy of liberal professions such as medicine and dentistry, into whose relations certainly sectionalism should never enter; and to reject the claims of Dr. Long or any one else on such grounds, in the face of such ample evidence, is simply dishonest.

The strictly substantial evidence on this subject—evidence which it is simply fatuous to ignore—is that Dr. C. W. Long on the thirtieth day of March, 1842, gave to young Venable ether, produced anæsthesia, and excised a tumor in his neck; that he repeated the administration *with success* again in June and July of the same year, and also

in succeeding years. There are numbers of people now living, physicians, prominent citizens of Jefferson, Jackson County, Georgia, ready to testify, and who do testify to these facts; people who could have no possible interest in the controversy, save in the cause of truth and justice.

The writer of the article in question claims for Dr. Wells, priority of suggestion in the matter of the use of nitrous oxide gas. The official facts are that Wells in 1840, after attempting the administration of gas, said that he "believed a man could be made so drunk on the gas as to have teeth extracted painlessly." But this idea was forty years old at that time, though Wells was doubtless unaware of it, as Sir Humphrey Davy had made this suggestion in the year 1800. It was not until 1844 that Wells first produced anæsthesia with nitrous oxide, *two years after* Long had publicly made known his discovery of the effects of ether.

Indeed the discovery itself was accidental, and was made not by Dr. Long, but by a young gentleman, afterwards his student, who in a frolic gave ether to a little negro boy, produced anæsthesia, and supposed the result to be fatal.

There has been an unjustness and unfairness in this controversy, painful to witness, among men whose only desire should be to know the truth and award the credit where it belongs.

We republish from the *New York Medical Record* for September 6th, one of the best summaries we have seen of the honors done in a public way to the memory of the discoverer of anæsthesia, meantime tending thanks to the family of Dr. Long for placing at our disposal a mass of most interesting documents bearing on the case, with full accounts of the public ceremonies, and other papers.

It is a singular circumstance that of the four men thus concerned in this controversy—Morton, Wells, Jackson and Long—that the first three should have died insane, and the latter of softening of the brain. And of Jackson the unworthy record is that although he was aware of Long's claims, and fully posted by personal interviews and exami-

nations of his priority, he failed to give him any public credit for his discovery.

We have just seen a very beautiful and touching letter from the daughter of Dr. Long, written to Dr. J. J. Caldwell, of Baltimore, acknowledging in grateful terms his endeavors to obtain from the medical profession public credit for the claims of her father, and of his advocacy of the cause of truth and justice in this matter.

ARTICLE III.

The Portrait of Crawford W. Long.

Its Presentation to the Georgia Legislature, in Atlanta, Aug. 22, '79. Address of Senator Gordon in behalf of the Donor, Mr. H. L. Stuart, of New York.

At an early hour on Friday, August 22, 1879, the galleries of the House of Representatives of the Legislature of the State of Georgia were filled with a brilliant assemblage of ladies and gentlemen, to witness the ceremonies of the presentation of the magnificent portrait of Dr. Crawford W. Long, a native of Georgia and the discoverer of the anæsthetic properties of sulphuric ether.

The painting is pronounced by competent observers a magnificent and faithful specimen of art portraiture, and seems a living reality to those who knew best the calm, thoughtful face of the physician whom it represents.

It is the generous and noble gift of Mr. H. L. Stuart, of New York, and was presented through Hon. J. B. Gordon, a member of the Alumni Association of the University of Georgia, and United States Senator.

At 11 A. M., General Gordon, Governor Colquitt, Senator Hill, and others, escorting the female relatives, wife and daughters of Dr. Long, entered the hall, preceded by the Senate in a body.

Speaker Bacon introduced General Gordon, who prefaced his presentation address by the following letter, read by the Clerk of the House:

"NEW YORK, August 12, 1879.

"HON. J. B. GORDON.

"DEAR SIR:—Will you do me the favor, as a member of the Alumni Association of the State University of Georgia, to present in my name the accompanying portrait (painted by F. B. Carpenter) of Dr. Crawford W. Long, a late member of this association, and the demonstrated discoverer of surgical anæsthesia by the use of sulphuric ether, March 30, 1842; to be placed in the Capitol of the State of Georgia, under their control and supervision.

"I desire to do this in honor of the memory and just fame of this eminent physician and useful citizen, to make his record complete as the discoverer of anæsthesia.

"Providence seems to have intervened to prevent the final settlement of this vexed question until the claims of this modest, unpretending and gifted man, who really made the discovery, were fully demonstrated by Dr. J. Marion Sims, a native of South Carolina, also a discoverer and a benefactor of humanity scarcely second to Dr. Long himself. His labors in Alabama, which led to the founding of the Woman's Hospital of the State of New York, have also resulted in giving him a world-wide fame as surgeon and investigator.

"It is fitting that these two eminent southern men should both be represented, as they are, in Mr. Carpenter's picture.

"Very respectfully and faithfully your friend,

"HENRI L. STUART."

The words of the gifted senator were eloquent and soul-stirring, and would that the space allotted us permitted of their entire reproduction. We must, however, only select such as seem to us to be the choicest sentences.

"I am here to ask your acceptance of that trust as a feeble and too tardy recognition of that great discoverer's claims to the homage of his countrymen and the gratitude of mankind.

"It so happens that we are indebted mainly to Dr. Marion

Sims, also now a resident of New York, a native of South Carolina, himself a benefactor through his discoveries, for the final and almost unquestioned recognition of Dr. Long as the real discoverer of anæsthesia, a science which may be defined, if the medical fraternity present will pardon me, as the science of paralyzing the sensibilities of the human frame to physical suffering, without the destruction of human life—of relieving and almost annihilating the extremest pains to which man is subjected.

"It was thus reserved for one of our own fellow-citizens to make this great discovery, and not only confer a signal triumph upon Georgia, but a blessing upon the human race, which is beyond the power of language to express or the imagination to conceive; an impartial history will abdicate its truest and its holiest mission, if it does not place the name of Crawford W. Long on the same scroll with those of the immortal Jenner, and John Howard, of England, the world-renowned philanthropist, or by the side of the imperishable names of any age.

"This recognition of Dr. Long as the discoverer of anæsthesia, I repeat, has been too long delayed, if it could have been otherwise; and Dr. Long must have so felt it. It is true that other great discoverers have lived and died without witnessing or even anticipating the best results to flow from their discoveries to the world. Franklin, for instance —the far-seeing Franklin—as he sent his little kite flying to meet the clouds and drew thence lightning to the earth and demonstrated its identity with electricity, little dreamed that he held within his grasp a mighty agent which was soon to become subservient to the will of man, to sweep around the globe at man's bidding, outstripping the sun in its flight, and bearing intelligence to man on its wings of fire. But not so with Dr. Long. As he stood, a modest, unpretending physician, in the county of Jackson, on that 30th day of March, in the year of Our Lord, 1842, testing his discovery upon his patient, he must have felt even then, in the very incipiency of his discovery, what a priceless

boon he was about to confer upon the human race. And as, with eager eye and throbbing brain, he looked from the result of this experiment over the vast field of human suffering which lay before, he must have lifted his heart in thankfulness to God that He had permitted him to be so great an instrument in the alleviation of physical anguish.

* * * * * *

"In the name of truth then, of justice, of science, of humanity and of religion, I commit to your keeping, representatives of Georgia, the claims and fame of our fellow-countryman and humanity's benefactor, Dr. Crawford W. Long."

Senator Gordon was frequently interrupted during the delivery of his address by bursts of applause.

Speaker Bacon then introduced Representative Benjamin C. Yancey, who received the portrait on behalf of the Alumni of the University.

Mr. Yancey reviewed at some length the history of anæsthesia by ether, a summary of which is contained in the following sentences:

"But the historic facts show that Dr. Long's claim antedates Well's by two years and eight months, and Morton's by four and a half years, and that we are justified, on the basis of truth, to make this public recognition to-day. I am indebted for most of these facts to the pamphlets of Dr. J. Marion Sims and Dr. J. M. Taylor, of Mississippi.

He then paid an elegant compliment to the donor, after which he read a poem written by one of Dr. Long's daughters soon after the death of her father, which seems filled with the spirit of prophecy. One of the verses reads as follows:

Bright, shining through the trees the sunbeams play
    And gild the ground;
They glimmer on the tombs of those who lay
    At rest around.
O'er thee, dear one! no stately column rears
    Its lofty head;
Thy life, thy noble life, is all that cheers
    Thy humble bed.

Though known to few, thy unrewarded fame
Was truly won.
Some day, thy nation's heart will proudly claim
Her gifted son.

The address of Mr. Yancey was loudly applauded by the cultured audience, and the event was a red-letter occasion in the history of the State, and its proceedings are embalmed in its records.—*New York Medical Record.*

ARTICLE IV.

[Continued from last Number.]

Proceedings of the Maryland and District of Columbia Dental Society. Annual Meeting.

We feel stronger each year in the opinion that a dental college should be free from all entangling alliances in the way of medical schools. Having sent students to and had assistants from both the pure blood and the half-breed schools, my opinion is that the instruction in the pure dental college is superior in point of such medical knowledge as the dentist needs, and why? Simply because it is taught from a dental stand-point and he is given the particular instruction he needs, and the mind is not overtaxed or burdened with the details and treatment of a thousand diseases not at all essential for a dentist to know, as it would be if he was called upon to treat them. If any dentist or student has the time and the means, and desires to master all the details of disease or the functions of each muscle and bone, let him attend a medical school and take the degree of M. D., but the title of M. D., does not show that he has received instruction in, or is competent to practice dentistry; but the title of D. D. S., does show that he has been so instructed. Let us not confound dentistry with medicine; any attempt to mix the two professions will weaken both; let us walk together as brothers having interests and studies in common; thus can we best assist each other in relieving suffering humanity.

We would again direct attention to the many valuable Ideas and records of actual practice and experiments that are printed in our journals from year to year, but are soon forgotten or lost to the dental student by being buried in a book-case or moulding in some back closet.

These records and experiments ought to be collected and tabulated; all new and interesting cases be noted and put in such shape that they could be made useful to all dental students, and when we say students we do not mean alone those entering or seeking to enter our profession, but all seekers of knowledge.

Our journals are constantly publishing things as new that are old and well known to the profession, such a collated tabulated or epitomized dental history.

It is to be hoped that some of the younger members of our profession will see the need and be stimulated to take hold of such a work, that every society and every well-posted dentist needs; not an essay or address is prepared but the need of such a work is felt unless he is a walking encyclopedia.

Such a work would keep us from being annoyed by many of the patents gotten out perhaps through ignorance of what had been in use both by the inventor and patent examiner.

The minds of our young men should be directed to the scientific aspects of our profession. The microscope and its use should be carefully studied so that we may know and be familiar with its use in studying the structure and disease of the dental organs. When we are so instructed there will be little trouble or thought of our professional standing.

The paper being open for discussion, Dr. Coy said he approved the whole paper, particularly the points of preliminary examination.

Dr. Caldwell thought there was too much strictness in examination for graduation, saying that although candidates might fail on examination they should still have a chance.

Dr. Winder said he had always been in favor of preliminary examinations, the standard not being too high or too low but such as would give a good foundation for professional education. That every diploma in the world should be granted because the candidate deserved it. He was in favor of a board of examiners, as tending to secure more impartiality in the examinations and consequently more weight and worth to the diploma.

Dr. Cutter approved of having a professional man thoroughly educated.

After a recess, the discussion of the morning was continued by Dr. E. P. Keech, who fully endorsed the position taken by Dr. Winder and made extended remarks advocating state legislations regulating the practice of dentistry for the protection of the profession and the public.

On motion of Dr. McPherson, the order of business was suspended to enable the Executive Committee to bring forward at this meeting the subject of printing the proceedings. Dr. Gorgas and Mr. Cowman were present, and after consulting together, through Dr. Gorgas, proposed that they would publish the proceedings in the AMERICAN JOURNAL OF DENTAL SCIENCE, if they could do so in consecutive numbers, so as not to take up too much of any one number. The Association accepted this liberal proposition and tendered thanks for it.

The subject of Dental legislation was resumed, and after full expression of views on the subject by Drs. E. P. Keech, Winder, Gorgas, Foster, Coy, Hunt, and Atkinson, Dr. E. P. Keech offered the following resolution which was adopted:

Resolved, That a Committee of three, of which the President of this Association shall be ex-officio, be elected with power to prepare and submit to the Legislature, a bill for the protection of the practice of Dentistry in the State of Maryland.

Dr. Winder moved that the Committee be instructed that the Association wishes a law passed that will require

an examination and a diploma, and that no one can be examined unless he is in possession of a diploma. Adopted.

Dr. Noble read a letter from Dr. B. M. Wilkerson, tendering his resignation as a member of this Society, on account of the action of the Association with reference to the White Dental Chair. The resignation was accepted.

On motion the Association then proceeded to the election of officers with the following result:

President.—Dr. M. Whilldin Foster, -	Md.
Vice-President.—H. B. Noble, - - -	D. C.
Rec. Secretary.—H. M. Schooley, - -	D. C.
Rep. Secretary.—J. B. Ten Eyck, - -	D. C.
Treasurer.—T. W. Coyle, - - - - -	Md.

Executive Committee.—Drs. R. B. Donaldson, J. L. Wolf, C. E. Duck.

Committee on Legislation.—Drs. M. W. Foster, *Chairman ex-officio;* R. B. Winder, B. F. Coy, T. S. Waters.

Drs. B. F. Coy, and T. W. Coyle were appointed to conduct the newly elected President and Vice-President to their chairs, who took their stations with a few appropriate remarks.

On motion of Dr. Winder, the name of Dr. E. P. Keech was by a unanimous vote added to the Legislative Committee.

The regular order of business was postponed to hear Dr. Ephraim Cutter, of Boston, read an article on "Food," as follows:

"FOOD IS AN AGENT OF TREMENDOUS POWER."—Dr. J. H. Salisbury, Cleveland, Ohio.

One of the finest traits of human character is the love of the beautiful. Harmonies charm our ears. The beauties revealed by the use of the microscope delight our eyes. Perfumes regale our sense of smell. When sick, the touch of the nurse's hand soothes our aching limbs. Food delightfully sates our taste. Especially when the sense of

hunger takes possession, does it seem as if nothing could be more beautiful than meats and drinks. This brings us to allude to the history of Food as an *Aesthetic Power.* Music may thrill us. The rapt observer may forget all in gazing at the forms of life found in common pools. The odor of the sea may agreeably brace the enervated frame. Massage may confer a satisfying sense of relief by the frictions of the terminal loops of the sensory nerves. Delicate morsels may cause the gourmand to sink all consciousness in the æsthetics of the palate—but is it not wonderful that food conveys impression to us through all the five sense channels?

The alimentary historian finds that mankind ask in relation to food:

1.—Does it taste nicely?

2.—Does it look goodly?

3.—Does it smell nicely?

4.—Does it affect the hearing nicely?

5.—Does it have a nice impression on the sense of touch?

These queries belong to the domain of æsthetics, that is, they include the idea of the beautiful. For example: Fruit that looks badly, smells badly, sounds uncrisply and has a punky touch, at once produces an impression opposed to the beautiful, and ordinarily is rejected as food.

Note how the æsthetics of the eye are consulted in relation to food. Take a State banquet as one of the highest expressions of food influence, backed by the riches, culture and taste of the Commonwealth. Eating is the central object in the occasion, but the banquet hall is paved with variegated marbles, decorated with plants, cut or whole; adorned with all the skill of the frescoer, painter, artist and upholsterer, so that above the head, beneath the feet, and on every hand the eye is regaled with the beautiful fixtures. The treasures of the loom, the spotless laundering, the marvels of glassery, the products of the most skillful gold and silversmiths, the finest table cutlery, the treasures of porcelain, the sparkling liquors, are spread artistically

on heavy tables, rich with massiveness and exquisite carving. Then the edibles themselves in the varied courses, are served up in the most beautiful, sometimes fantastic shapes and forms by attendants whose looks scrupulously avoid anything that offends the eye. The guests themselves are attired after the requirements of the best ocular taste. Indeed, pen cannot do justice to the dress and toilets of the fairest of the fair, to say nothing of the daughters themselves, whom all declare the most beautiful objects found in nature, whom all delight to honor, and without whose presence to grace the occasion, the banquet would be a failure. The animated scene is like "apples of gold set in pictures of silver;" and so in a first-class effort to eat food we find combined in one array a grand display to captivate the sense of sight. On the other hand anything even harmless in itself that offends the eye even at an ordinary meal is enough to drive away the guests. We know of some very worthy practical and common-sense sort of folks who were driven away from a sea-side boarding-house by the fact that the table was covered with variegated enamel cloth. They wanted linen, as they were used to it.

Note the æsthetics of Sound in connection with a State banquet. Skilled artists load the air with chamber music. Sometimes the sounds of a miniature water-fall lull the ear. Then the sweeet music of the voices of loved ones, honored ones, celebrated ones, excite the pleasures of the tympanum. The pleasant noise of knives and forks, the clash of plates, the agreeable jingle of ice in water pitchers; the soft tread of the attendants; the hum of edible industry, all affect the ear delightfully.—(If you doubt, recall your history when an excluded boy you hung outside some civic or military dinner, hearing, seeing, smelling—everything but touching and tasting the forbidden feast.)

What more appetizing and delightful than the sounds of the crackling bubbles of fat in cooking to a hungry fisherman just in from a hard day's sport? The sense of smell

seems to have an especial field of exercise in food matters. Delicious odors convey to the sensorium intelligence of the presence of food sooner than sight, sound, or touch. The invisible particles of perfume from fruits in the subtle and unanalyzed alcohols and ethers, volatilized in the air, excite the pleasure of the olfactory nerves—in what manner we know not. They pervade the kitchen, dining-room and house, notifying the waiting guests of the stages and readiness of the repast and adding zest to the appetite. So also disagreeable odors from food command instant recognition sometimes of noxiousness and warning. Often the air of the State banquet halls is loaded with the odors of orange blossoms or delicate colognes. Not but that poisonous aliments may be beautiful to the smell, but generally to most sensoriums, enjoyable odors are foretastes of the gustatory delight.

If any think there are no æsthetics of the sense of touch in the matter of foods, let a gravel-stone get in between the teeth while eating—how the prandal pleasure is marred. "The nerves are set on end," as we say, and not an agreeable "end" either. Or suppose one finds a hair in the breakfast butter or hash—but no need of this disagreeable side of our subject. We want our fruits when touched by the hand to have a certain standard of solidity, else they fail of the requirement and at once are pronounced not good. The standard varies for different articles. We like hardness in butter, but not in melons; toughness in steaks, and other meats is not very beautiful, while tenderness and fragility are prized. We judge of the proper completion of the stages of cooking by the sense of touch. Hence the cook pierces the flesh or vegetable with forks to ascertain the completion of the process. So also we test apples, and fruits, punch peaches and melons, shake cocoa nuts as a *physical exploration* of the exact edible condition of the article in question. It seems then to the writer that he is right in saying that the æsthetics of touch form one of the standards whereby food is judged.

It needs but a mere mention to remind how much the æsthetics of taste judge the fitness of food. To be sure abuse may pervert the gustatory sense, so that often it is warped far away from its natural standard. Some delights of taste are matters of education and culture. We have to learn to eat olives for example. Climate also has to do with tastes. The Esquimaux quaff oil as the Cuban eats pepper. A little travel shows the variation in tastes for food. Still, in health the acts of eating are usually pleasurable to the gustatory nerve, and the love of the beautiful of this sense is gratified; not but that healthy persons eat from the sense of duty, still those who eat for the sake of pleasure probably do not realize the æsthetic gratification of those who eat to live and do not live to eat. When the gustatory nerve gives information as to an article of food of non-æsthetic nature it will be rejected unless stern necessity or famine force. So when excess in eating has cloyed—that is undoubtedly enough—the substance that was longed for and needed now by too much use excites displeasure if not disgust. But often food that is known to be injurious is partaken of because it is æsthetic to the taste—the eater ignoring the certain subsequent misery. Drinks are food. Some are known to drink to drunkenness when they realize the injury of the proceedings. This seems to be a species of insanity as to a given sense.

When it is remembered that food has many other relations than those pertaining to the senses—it seems singular that so one-sided and important a matter is judged so much by the æsthetic standard. But this being natural and instinctive, we say naught against it. We would rather affirm the reasonableness of combining with it other standards. As man has advanced from the savage to the civilized state he has became a recording animal, and thus has acquired a literature of science and art. Workers in past ages have recorded the results of their thoughts and labors, and our present state of knowledge thus derived embraces in relation to food a much larger range of stand-

points of view than the purely æsthetical, however practical and important. These deserve to be more widely known and it is desired to call attention to them.

FOOD A POWER AS A CHEMIC.

Though much remains to be learned and is uncertain in Chemistry, still large additions to our ideas of food comes from this field of human knowledge. The Chemist tells us that our bodies are made up of about 16 (sixteen) ultimate elements, more or less. In his view man's body is an assemblage of so many atoms of Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorous, Sulphur, Lime, Potash, Soda, Iron, Manganese, Magnesia, Iodine, Silica, Boron, Lithium. Some chemists say there are more than forty ultimate elements but others regard them as accidental. Now on this view all our combined food must have all these sixteen elements. On this ground air is food, as it contains Oxygen and Nitrogen. Indeed the fact that life can be sustained for days without eating, while five minutes without breathing results in death seems to settle the question of air as food. Now if we ask the Chemist what is good food, he would answer, those aliments which have passed the criterions of æsthetics and contain in proper combination and in assimilable forms the greater part of the elements found in the human body.

On this view alone, that is if every part is eaten, can cannibalism be justified? Fish thrive on fish. Birds prey on birds. Thus eating they obtain good chemical food. As however man in cannibalism eats muscles, it is difficult to see how bone for example can be organized out of such food. Or if he eats bone how it can be digested, as he does not have the grinding apparatus of the common fowl. Of course should the Chemist portion out of his laboratory the various elements in the proportion found by his analysis and then set a child to eat them, the experiment would not be a success, because the gauntlet of digestion could not be run. But we can ask what natural aliments are bone food,

nerve food, blood food, &c. He would say that aliment containing the proper amount of mineral elements in assimilable forms would be good bone food; for example: beans—meals of the five royal grains; Wheat, Rye, Barley, Oats and Maize. The late Dr. Benjamin Cutter, of Woburn, Mass., used to give his surgical cases eggs, including shells, for bone food in cases of fractures and with good results.

So the Chemist tells us butter is good nerve food, as it largely contains fat acids almost identical with those found in nerve tissues. For the blood he states that milk is a perfect food. All body elements are found in it. It has water enough for a drink. It is in this respect uniform. It is also one of the great blessings of the age that "our land flows with milk." But greed has arrived at this superb food and adulteration in brain food for the sake of gain have made it a source of disease. (Dr. R. W. Piper's report Chicago, 1879.) Eggs come next to milk as a Chemical Nerve Food, and the grains, the Legumens, Rice, &c., are good blood food from this point of view. The great Liebig indicated the loss inflicted by altering food from the standard set by the Creator. He alluded especially to the withdrawal of the phosphates and other salts from wheat in the manufacture of flour. The gluten cells that contain the phosphates are rich in the inner layer of the tegumentary cellulose that surrounds the starch substance, and contains the coloring matter; the retention of the gluten cells causes the bread to have a brown, bronze or black color. Society on æsthetic grounds has ordained that flour bread to be good must be white. Hence it follows that there is a withdrawal of 75 per cent. of the mineral matter found in wheat. The Chemist's view is that this large withdrawal is an evil. The writer thinks that the present prevalence of decayed teeth, weak nervous systems, change in the type of disease from strong to weak, premature baldness and gangrene of the hair, the decline in the natural normal increase of the population can be

traced to the general use of flour—an impoverished food. No diatribes or hobbyisms are intended, but the solid foundation for this supposition rests on the three-fourths withdrawal of Phosphorus, Lime, Potash, Soda, &c., and on the fact that in cases where the dicta of the Chemist have been listened to and meals have been used in place of flour that there has been a manifest improvement in the respects cited. Thanks to the industry of the Chemist. Almost every vegetable has been analysed, so that those wishing to test food by the chemical standard can readily do so. Prof. Johnson's admissible and valuable work, "How Crops Grow," contains in the appendix many analysis of this kind. As to animal foods, when normal, they are usually undisturbed by man, and always answer to the chemical tests.

[TO BE CONTINUED.]

ARTICLE V.

Preparation of the Mouth for Artificial Dentures.

BY JOHN LAUDER, L. D. S., D. D. S., MONTREAL.

It cannot be denied but that a large proportion of artificial dentures are not worn with perfect comfort. A good many are merely tolerated, and a fair proportion not used at all, but thrown aside as uncomfortable.

I propose in this paper to examine some of the causes which lead to misfits, and some of the precautions to be taken preparatory to their insertion.

1. PARTIAL SETS

Demand more care and skill than full dentures. Sufficient attention is not paid to the complete absorption of the gums and alveolus, and the removal of salivary calculus in standing teeth. It is necessary to remove all tartar from the necks of the teeth; but to secure a particularly good fit, where the tartar has accumulated to such an extent as to intrude upon and inflame the gums, I would remove it *some days*

before taking the impression; because if the impression is taken at the same sitting, sufficient time is not given for the subsidence of inflammation and the change which is sure to follow, and which is quite sure when it occurs after the set is inserted to alter the nice adaptation of the plate at the margins of the gums. In fact, where the gums are swollen in any case about the necks of the teeth, either from simple inflammation, the discharge of purulent secretion, etc., a few drops of equal parts of Fleming's Aconite, and Liniment of Iodine should be painted on the gums before taking the impression.

Care must be taken not to leave in loose teeth which would destroy any good fit in course of time. It may at times be allowable and perhaps preferable to leave a healthy root. No rule but the judgment of the dentist can dictate. Of course any cavities in standing teeth should be filled and the patient instructed to use the most absolute cleanliness when wearing the set.

One very sound reason why a root should occasionally be left, is that after its removal the adjacent teeth change their position if the plate is not constantly worn; and if the plate should be left out for any length of time by reason of illness or otherwise, even the articulation of these teeth with their lower antagonists is in a measure destroyed. A root may be often an invaluable retainer; healthy roots are no more liable to become diseased than before the crown was destroyed—that is, if the pulp was dead. If left in they should be dressed down with the corundum wheel on the engine as for pivot teeth.

It is a custom in preparing for upper sets, where all the other teeth have to be removed, to sacrifice the cuspids in almost every case, even though they should be sound. Nature has implanted these teeth like the pillars of an arch to preserve the contour of the face. The length and the prominence of their roots show that they are specially adapted to preserve the shape of the face. I prefer to save them whenever possible, because they preserve this contour,

and prevent the ugly falling of the face under the nostrils, where no artificial substitute ever can extend high enough to remedy the defect. Blocks of four can be obtained or carved to be fitted neatly in one section to the space between the cuspids. Of course it is supposed that these teeth are really worth preservation, and are of good enough structure to justify their retention. I have very often found this to be the case, and I may here say, that a set skillfully made in this way is worth a larger fee than the ordinary full upper set.

FULL SETS.—UPPER OR LOWER.

As a general thing the roots should be entirely removed when a single full set is to be inserted on atmospheric pressure. There may be circumstances in old people where springs could be used, and the healthy roots left. In the older countries of Europe, roots seem to last better than here, and the pulp cavities are often opened, filled with gold, and may remain for many years; but a perfect fitting set cannot be thus made, as nature effects the ultimate dislodgment of the roots, and as they are ejected they cause the plate to loosen.

There may be special reasons, such as ill-health—when all healthy roots should be retained. Ordinary cases are treated in an ordinary way; but take mouths where there is a great protrusion and excess of the alveolus with a short lip. No matter how thoroughly the mouth heals, it is not probable that the absorption will be sufficient to allow of the insertion of *gum teeth* at any time. There may be cases where the alveolus has absorbed so little at the upper part *under the nostrils* that the lip does not recede at this point, and plain teeth may be used; but the larger proportion turn out quite the reverse, and while the bone changes but little at the lower front, a deep absorption results just where it is most noticed, and just where no substitute can be applied on account of the shortness of the lip, which would expose any vulcanite placed over front teeth. To

forestall this difficulty in such a case I would prefer, after the extraction of the teeth, to cut down the alveolus with alveolar or excising forceps, from the second bicuspid on both sides towards the front; dissecting the gum if necessary, and cutting both inner and outer plates as well as removing the transverse processes and adjacent sockets. The result must be that the absorption is greater, and the mouth a better shape eventually than if all the sockets, etc., were left to the slow and natural process of change.

Another alternative may be resorted to in some cases. If the roots of the ten teeth can be preserved in a healthy condition by excision and dressing down, and plugged; and then plain teeth adapted over these, with gum molar blocks or wings behind, the difficulty may be overcome.

The *den. sapentiæ* ought to be extracted invariably. They are no sort of use in any case, and ninety times out of a hundred if left, only involve the loss of suction and the renewal of the set at some future time.

The question of retaining roots has provoked a good deal of discussion in England. It is held there that by their removal you destroy the shape of the face, as well as the alveolar ridge. As I said in a previous part of this paper, there may be special cases where the retention of healthy roots is desirable and even preferable; but it seems a fact that roots do not remain as healthy in America, as in Europe, and that we cannot follow the practice here as indiscriminately; and even those who advocate in Europe their retention, admit in many cases that any artificial substitute can only be temporary, placed over roots; that the time must come when they will cause trouble, and that their extraction has at last to be resorted to. Yet there are more serious arguments against their retention. If patients have to wear artificial teeth at all, the earlier they become accustomed to the greater bulk of gum teeth and vulcanite, the better will the plate be worn. Besides a plate worn over roots has no lasting comfort. It is also always exposed to fracture over the roots as the roots

elongate. Another objection may be offered, viz., that neuralgic pains in the head, nausea, and bad breath are frequently present when roots are retained. Obscure pains in the head may be often traced to this cause.

After extraction where roots have been ulcerated and pus has discharged, the patient should be instructed to rinse the mouth thoroughly several times a day with water as hot as it can be borne, and indeed the hot water after extraction, used frequently, is one of the most useful applications to reduce inflammation and tenderness.

After a couple of days of this treatment I would recommend an astringent wash of Pyrethrum Root.

Where the patient has been chloroformed, I recommend a Turkish bath, as tending to cleanse the system of its influence.—*Canada Journal Dental Science.*

ARTICLE VI.

Heating Metals in Vacuo by the Electric Current.

A very interesting paper, by Mr. T. A. Edison, was read before the American Association at Saratoga the other day.

"In the course of my experiments on electric lightning," says the author, "I have developed some striking phenomena arising from the heating of metals by flames and by the electric current, especially wires of platinum and platinum alloyed with iridium. These experiments are still in progress.

"The first fact observed was that platinum lost weight when heated in a flame of hydrogen, that the metal colored the flame green, and that these two results continued until the whole of the platinum in contact with the flame had disappeared.

"A platinum wire, twenty-thousandths of an inch in diameter, was wound in the form of a spiral one-eighth of an inch in diameter and half an inch in length. The two

ends of the spiral were secured to clamping posts, and the whole apparatus was covered with a glass shade. Upon bringing the spiral to incandescence for twenty minutes that part of the globe in line with the sides of the spiral became slightly darkened; in five hours the deposit became so thick that the incandescent spiral could not be seen through the deposit. This film, which was most perfect, consisted of platinum, and I have no doubt but that large plates of glass might be coated economically by placing them on each side of a large sheet of platinum, kept incandescent by the electric current. This loss in weight, together with the deposit upon the glass, presented a very serious obstacle to the use of metallic wires for giving light by incandescence, but this was easily surmounted after the cause was ascertained. I coated the wire forming the spiral with the oxide of magnesium by dusting upon it finely powdered acetate of magnesium. While incandescent the salt was decomposed by the heat, and there remained a strongly adherent coating of the oxide. This spiral so coated was covered with a glass shade and brought to incandescence for several minutes; but instead of a deposit of platinum upon the glass there was a deposit of the oxide of magnesia. From this and other experiments I became convinced that this effect was due to the washing action of the air upon the spiral; that the loss of weight in and the coloration of the hydrogen flame was also due to the wearing away of the surface of the platina, by the attrition produced by the impact of the stream of gases upon the highly incandescent surface, and not to volatilization, as commonly understood.

"I will now describe other and far more important phenomena observed in my experiments.

"If a short length of platinum wire, one-thousandth of an inch in diameter, be held in the flame of a Bunsen burner, at some part it will fuse and a piece of the wire will be bent at an angle by the action of the globule of melted platinum; in some cases there are several globules

formed simultaneously, and the wire assumes a zigzag shape.

"With a wire four-thousandths of an inch in diameter this effect does not take place, as the temperature cannot be raised to equal that of the smaller wire owing to the increased radiating surface and mass. After heating, if the wire be examined under a microscope, that part of the surface which has been incandescent will be found covered with innumerable cracks. If the wire be placed between clamping posts, and heated to incandescence for twenty minutes by the passage of an electric current the cracks will be so enlarged as to be seen with the naked eye; the wire under the microscope presents a shrunken appearance, and is full of deep cracks. If the current is continued for several hours these effects will so increase that the wire will fall to pieces.

"This disintegration has been noticed in platina long subjected to the action of a flame, by Prof. John W. Draper. The failure of the process of lighting invented by the French chemist, Tessiè-du-Motay, who raised sheets of platinum to incandescence by introducing them into a hydrogen flame, was due to the rapid disintegration of the metal. I have ascertained the cause of this phenomenon, and have succeeded in eliminating that which produces it, and in doing so have produced a metal in a state hitherto unknown, and which is absolutely stable at a temperature where nearly all substances melt or are consumed, a metal which, although originally soft and pliable, becomes as homogeneous as glass and as rigid as steel. When wound in the form of a spiral it is as springy and elastic when at the most dazzling incandescence as when cold, and cannot be annealed by any process now commonly known.

"For the cause of this shrinking and cracking of the wire is due entirely to the expansion of the air in the mechanical and physical pores of the platinum, and the contraction upon the escape of the air. Platinum as sold in commerce may be compared to sandstone in which the

whole is made of a great number of particles with many air spaces. The sandstone upon melting becomes homogeneous and no air spaces exist. With platinum or any metal the air spaces may be eliminated and the metal made homogeneous by a very simple process. This process I will now describe. I had made a large number of platinum spirals, all of the same size and from the same quality of wire; each spiral presented to the air a radiating surface of three and one-sixteenths of an inch; five of these were brought by the electric current up to the melting point, the light was measured by a photometer, and the average light was equal to four standard candles for each spiral just at the melting point. One of the same kind of spirals was placed in the receiver of an air pump and the air exhausted to two millimeters; a weak current was then passed through the wire to warm it slightly for the purpose of assisting the passage of the air from the pores of the metal into the vacuum. The temperature of the wire was gradually augmented at intervals of ten minutes until it became red. The object of slowly increasing the temperature was to allow the air to pass out gradually and not explosively. Afterward the current was increased at intervals of fifteen minutes. Before each increase in the current the wire was allowed to cool, and the contraction and expansion at these high temperatures caused the wire to weld together at the points previously containing air. In one hour and forty minutes this spiral had reached such a temperature without melting that it was giving a light of twenty-five standard candles, whereas it would undoubtedly have melted before it gave a light of five candles had it not been put through the above process. Several more spirals were afterward tried, with the same result. One spiral which had been brought to these high temperatures more slowly gave a light equal to thirty standard candles. In the open air this spiral gave nearly the same light, although it required more current to keep it at the same temperature.

"Upon examination of these spirals, which had passed through the vacuum process, by the aid of a microscope, no

cracks were visible; the wire had become as white as silver, and had a polish which could not be given it by any other means. The wire had a smaller diameter than before treatment, and it was exceedingly difficult to melt in the oxyhydrogen flame, as compared with untreated platinum; it was found that it was as hard as the steel wire used in pianos, and that it could not be annealed at any temperature.

"My experiments with many metals treated by this process have proved to my satisfaction, and I have no hesitation in stating, that what is known as annealing of metals to make them soft and pliable is nothing more than the cracking of the metal. In every case where a hard drawn wire had been annealed a powerful microscope revealed myriads of cracks in the metal.

"Since the experiments of which I have just spoken, I have, by the aid of Sprengel mercury pumps, produced higher exhaustions, and have, by consuming five hours in excluding the air from the wire and intermitting the current a great number of times, succeeded in obtaining a light of eight standard candles from a spiral of wire with a total radiating surface of 1–32 of an inch, or a surface about equal to a grain of buckwheat.

"With spirals of this small size which have not passed through the process the average amount of light given out before melting is less than one standard candle. Thus I am enabled by the increased capacity of platinum to withstand high temperatures, to employ small radiating surfaces, and thus reduce the energy required for candle-light. I can now obtain eight separate jets, each giving out an absolutely steady light, and each equal to sixteen standard candles, or a total of one hundred and twenty-eight candles, by the expenditure of thirty thousand foot pounds of energy, or less than one horse power.

"As a matter of curiosity I have made spirals of other metals, and excluded the air from them in the manner stated. Common iron wire may be made to give a light greater than platinum not heated. The iron becomes as

hard as steel and just as elastic. Nickel is far more refractory than iron. Steel wire used in pianos becomes decarbonized, but remains hard and assumes the color of silver. Aluminum melts only at a white heat."—*Scientific American.*

ARTICLE VII.

Pittsburgh Dental Association.

At a regular monthly meeting held June 10th, 1879, the following resolutions were unanimously adopted:

WHEREAS, The profession of Dentistry now suffers, and has suffered in the past from the empiricism of many of its practitioners, and

WHEREAS, The Dentist occupies the position of a public teacher his education should be such as to enable him to give a satisfactory and scientific reason for what he does, or proposes to do, therefore

Resolved, First, that an applicant for the position of student in the office of any member of this Association, shall be not less than eighteen years of age, of good moral character, and shall furnish satisfactory testimonials of the same.

Second.—A diploma from any Chartered Literary Institution, shall be deemed sufficient evidence of an applicant's preliminary educational qualifications.

Third.—The minimum preliminary educational qualifications shall be a thorough knowledge of Orthography, Reading, Writing, Arithmetic, Grammar and Geography, together with a knowledge of the Latin Grammar, and ability to read and translate a selection from any of the first five books of Cæsar's Commentaries.

Fourth.—That an Examining Board, composed of three active members of this Association, shall be elected at each annual meeting. The duty of said Board shall be to examine all applicants for admission, as students, to members of this Association. After examination of an applicant, each member of this Board will be entitled to ten votes, the applicant to receive twenty votes to entitle him to become a student.

W. F. FUNDENBERG, M. D., *Pres.*

H. W. ORR, D. D. S. *Sec'y.*

EDITORIAL, ETC.

The New Departure Again.—We had occasion in the last JOURNAL to make brief comment upon that part of the report of Section VI, Metallurgy and the Chemistry of the Metals, (Maryland and District of Columbia Dental Association,) and adverted to the, as we thought, new theory—that of "destructive alkalinity"—broached by the authors of that report.

The following note, which we print with pleasure, sets those interested right upon the record, at least so far as gold is concerned; and we hasten to assure Dr. Chase that no intention to misrepresent the "New Departure" was intended.—EDS.

THE "NEW DEPARTURE" CORRECTS SOME ERRORS.

"1.—That pure gold introduced into a tooth as a filling is inert, and of itself exercises no electric or galvanic action on the tooth."

Messrs Editors.—On page 378 of December number of the AMERICAN JOURNAL OF DENTAL SCIENCE will be found the above quotation. You say on same page, "these statements and conclusions are in broad variance with the 'New Departure.'"

You are mistaken. The "New Departure" heartily agrees with the quotation. The apostles of the "New Departure" never denied the proposition, or said anything to the contrary.

It is very strange that the "New Departure" is continually misrepresented. We are getting rather tired of correcting the misrepresentations.

I will make a "New Departure" addition to the quotation, which will then read thus:

1.—That pure gold introduced into a tooth as a filling is inert and *of itself* exercises no electric or galvanic action on the tooth.

But if the gold-filled tooth is immersed in an acidulous fluid, there is, instantly, galvanic action set up, which must, according to the laws of electric action, disintegrate the tooth, as long as the above conditions continue.

We say that there is no destructive action on the tooth while it is bathed in neutral oral fluids.

Furthermore, we do not advocate the use of amalgams which leak. There are those which do not leak; these we use.

Furthermore, we do not advocate the use of plastic fillings in which Chlorine forms a part.

We know that the "Oxy-phosphates" are far better, and advocate their use.

Furthermore, we never have stated that plastic fillings are permanent.

We do believe in and advocate the use of plastics for the purpose of tooth salvation, even if the fillings need frequent renewal on their exposed surfaces.

We have found by numerous experiments that a cube of dentos with a large gold plug in it will dissolve six times as much in a given time as a similar cube not plugged at all, when both are placed in dilute vinegar, or lemon juice. When plugged with Amalgam, four times as much; Tin, three times as much; Gutta-percha, one time as much; Oxy-phosphates, no loss of dentos.

In the latter case the electric action is reversed. In this case the plug is positive to the dentos, and so, of course, the plug loses in weight while the dentos is preserved.

With metallic plugs the cubes of dentos were positive to the plugs, and of course had to lose substance. In a battery it is the positive element that loses weight.

Any dentist who will take the trouble to study electricity and galvanism, and then make experiments with dentos and filling materials, cannot come to any other conclusion than that *the Principles of the New Departure are true*, and are in harmony with electrical science.

HENRY S. CHASE,
St. Louis, Mo.

Lectures.—Dr. J. N. Farrar, of Brooklyn, gave during the second week in December a course of lectures to the Students of the Baltimore College of Dental Surgery, on "The Direct Process in Regulating Teeth," elucidating the prominent parts in the method advocated by him, and illustrating by models and apparatus the advantages of the same. A report of the lectures is promised soon.

A Set of Dies and Taps for Amateurs and others has been sent by the Pratt & Whitney Manufacturing Company of Hartford, Conn., to the writer. For beauty of workmanship and perfection of execution in use, these are superior tools to anything we have seen. Just the thing to enable the amateur to fill in odds and ends of time, if his fondness for machine work is not dormant. Six dies and six taps, and wrench, in a beautiful velvet lined case, ranging from the size of an engine bur shaft to a one-fourth inch bolt. H.

BIBLIOGRAPHICAL.

The Importance of Preserving the Teeth, and Dental Ethnography. By Thomas L. Sydner, D. D. S., of Danville, Va.

This is a small work prepared for the public, in which the author has endeavored to exclude, as far as practicable, technical terms, and render it a practical treatise.

Commencing with the relations of the teeth to the system, their functions and effects upon speech, health, character and features, the author dwells at considerable length upon the most common of their diseases—dental caries, showing the influence of acids, etc., systemic causes, necessity for frequent examinations, and the prevention of decay.

Many subjects relating to the development and formation of the teeth, their eruption, and the care necessary for both temporary and permanent teeth are dwelt upon. Dentonomy or dental physiognomy also claims attention, in which the physiological characteristics of the teeth are described, and the influence of temperament referred to. The author has succeeded in presenting a very readable little work, which must prove serviceable to the public at large, and especially to such patients of the writer as feel interested in the care of their own and of their children's teeth. The work is illustrated with cuts relating to the eruption of the temporary and permanent teeth.

The Mouth and the Teeth. By J. W. White, M. D., D, D. S. This is another of the series pertaining to Sanitary Science and the preservation of the health, known as American Health Primers, edited by W. W. Keen, M. D., and published by Lindsay & Blackiston, Philadelphia.

This volume by Dr. White is an interesting and comprehensive treatise, giving valuable information and directions for the preservation of the teeth and adjacent parts. It is illustrated by engravings fully explaining the text, and must prove of essential service to all interested in the care of children, as well as in the condition of their own dentures. Commencing with the Mouth we find the teeth from their development to their eruption fully described, together with their nervous relations, constitutional peculiarities and defects. The hygiene of the mouth receives careful notice, and artificial dentures closes the subjects treated of. So much that is useful is embraced in this small work, and so clearly and correctly is all explained, that it forms one of the most important volumes of the series. The price of these volumes is but 50 cents.

The Physician's Visiting List for 1880. Publishers: Lindsay & Blackiston, Philadelphia.

This is the twenty-ninth edition of this annual publication, and like its predecessors is a useful engagement book for the dental as well as the medical practitioner. Its contents consist of an almanac, table of signs, Hall's ready method in asphyxia, poisons and their antidotes, the metric system, posological table, and table for calculating the period of utero-gestation; ending with blank leaves for engagements, visits, memoranda, records, &c.

Vick's Floral Guide for 1880. We are in receipt of another beautiful volume of this enterprising florist for the new year, illustrated by handsome colored chromos of everlasting flowers and sweet peas. The seeds, flower and vegetable of this celebrated grower, are well known throughout the entire country, and give satisfactory results to all planting them. In the Floral Guide much valuable information can be obtained, and the illustrations are profuse and instructive. Address James Vick, Rochester, New York.

Atlas of Human Anatomy, containing 180 large plates arrayed according to Dr. Oesterreicher and Erdl from their original designs from nature and those of the greatest anatomists of modern times, with full and explanatory texts by J. A. Jeancon, M. D. Publishers: A. E. Wilde & Co., Cincinnati, Ohio. This Atlas is published in parts, one of which we have received, and is certainly a commendable publication.

The plates are large, with the organs beautifully portrayed and faithfully drawn, rendering them useful adjuncts in the study of human anatomy.

The publishers deserve great credit for the manner in which they have presented this important work, and the style in which it is executed.

The Throat and the Voice. By J. Solis Cohen, M. D. Publishers, Lindsay & Blackiston, Philadelphia.

This is another of the series of American Health Primers, and like its companions is a useful and instructive treatise. Commencing with the general construction of the throat, its diseases are noticed in an interesting and comprehensive manner. Part second relates to the voice, commencing with the acoustics, varieties, culture, improper use of, defects, vocal gymnastics, and ending with the care of the voice.

Like the other volumes of the series, this treatise is illustrated by engravings which assist in understanding the text relating to the anatomy of the throat, and vocal apparatus.

The Scientific American. Published by Munn & Co., 37 Park Row, New York City, for $3.20, postage included, per annum, has now reached a weekly edition of fifty thousand copies. Its contents are varied and instructive, comprising much that is useful and interesting, together with finely executed engravings of machinery, useful inventions, and natural history.

Every number contains interesting articles on scientific subjects, from which much useful information can be derived, and no expense is spared to render it attractive as well as useful to all professions and trades.

Books Received.—A Practical Treatise on Materia Medica and Therapeutics. By Roberts Bartholow, M. A., M. D., L. L. D. New York: D. Appleton & Co. Third Edition; revised.

An Illustrated Dictionary of Scientific Terms. By William Rossiter. London: William Collins, Sons & Co. New York: Putman & Sons.

OBITUARY.

Dr. Samuel Stockton White.—It is with sincere regret that we announce the death of one, who has not only been closely identified with American Dentistry, but also with the Dentistry of the entire civilized world for many years, and to whose untiring energy, generous disposition, and business qualifications many of the most important improvements and inventions of our day and generation are due.

The name of "S. S. White" has long been a familiar one to dental practitioners wherever located, and almost numberless times, by his devotion to the interests of our science, and by timely assistance to those struggling to obtain a knowledge of our profession and the means whereby to practice it, has Dr. Samuel S. White merited the gratitude and earned the respect due to a benefactor of our race, and the friend of a liberal profession.

His splendid and successful achievements as a business man, and his character and reputation as a citizen afford a remarkable example, and one worthy of imitation, of what energy, pure motives and untiring perseverance may accomplish.

Dr. White left home, in company with a son and nephew, in November last, to travel for a time in Europe for the benefit of his health. They had been in Paris but a few days till he was taken suddenly ill, and this was followed within forty-eight hours with the news of his death, which occurred December 30th, 1879. Congestion of the brain was the cause.

Resolved, That the Dental Practitioners of Baltimore City have learned with deep regret of the death of one who has been for many years closely identified with the Dental Profession, at that period of life when the mental powers are in their fullest vigor, when his honorable career as an enterprising business man had won for him a world-wide reputation, and whose personal qualities, as exemplified in every relation of life, had secured the warm attachment and high respect of a large circle of devoted friends.

Resolved, That the Dental Practitioners of Baltimore City fully recognize the obligations American Dentistry owes to the late Dr. S. S. White through the active agencies he has awakened for the elevation of the science, his devotion to its interests, and the zeal, energy and intelligence he displayed in useful inventions and dental literature.

Resolved, That this expression of appreciation of the worth of the late Dr. Samuel Stockton White, in the form of a copy of these resolutions, be transmitted to the bereaved family of the deceased, and that they also be published in the different Dental Journals.

Respectfully Submitted,

F. J. S. Gorgas,
T. S. Waters,
A. P. Gore,
Committee.

Professors Gorgas and Winder, on the part of the Faculty of the Baltimore College of Dental Surgery, and Dr. H. H. Keech, on the part of the Dental Practitioners of Baltimore City, were appointed to attend the funeral in Philadelphia.

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ARTICLE I.

[Continued from last Number.]

Proceedings of the Maryland and District of Columbia Dental Society. Annual Meeting.

FOOD AS A KINETIC.

"When a weight is lifted by the hand it seems a long way off to go to the sun for the muscular force employed in the act, yet the doctrine of the conservation of energy justifies the conclusion that its origin is there. (Pavy on Food, p. 20.) In 1843, Grove, of London, enunciated the doctrine of the 'Correlation of the Physical Forces' to wit: that force can neither be created nor destroyed. It may be variously combined and modified, but it remains the same in essence and unaltered in amount. The word 'correlation,' Grove indicated, meant, that any 'force capable of producing another, may, in its turn, be produced by it.'

In 1842, Mayer, of Germany, propounded the doctrine of the 'Conservation of force.' At about the same time, Mr.

Joule, of Manchester, England, discovered the equivalent of heat in mechanical motion. He found that heat enough to elevate *one pound* of water one degree Fahr., would, under another mode of action raise 772 pounds a foot high. So that one pound of water 772 feet high forms the dynamic (dunamos-force) equivalent of one degree of heat Fahr. Mr. Grove suggested that his doctrine could, in addition, be applied to the organic world, and that muscular force, animal and vegetable heat, &c. would be shown to possess similar relations. At this time organic processes were believed to be due to 'vitality' and the physical forces to be overruled by the 'vital principle.' Conceding that in the living organism there are influences that do not exist in dead matter, still, the effects may have their origin in the physical forces—the living matter forming the medium through which they operate. With artificial appliances force may be made to produce various effects, according to the nature of the instrument employed. With the same force in operation, different kinds of work are performed according to the character of the machine set in motion. Between the two—living matter and the machine—there exists an analogy which admits of being carried still further. It is only when in a certain state that matter is capable of forming the medium for the exercise of force in the production of living operations. Modify this state, and though there may be the same matter to deal with, yet it is no longer capable of fulfilling the same office it before performed: so in the case of an ordinary machine, it must possess a particular construction before it can form the medium for the operation of force. Disarrange this construction, and, although the matter remains unchanged, the application of force is without its proper effect. Thus a disarranged machine may be compared with living matter *devitalized*. In both, the capacity of being set in operation by force has existed, and in both that capacity has been lost. Further, it may be said that a machine in working order, but unoperated, is like matter possessing vitality but

in a dormant state—both are ready to move directly the proper force is supplied." But how does the food furnish kinetic, (kineo—to move,) energy to muscles?

First, the force has its source in the food; if this is doubtful, let the doubtor stop eating entirely. Second, food comes primarily from the vegetable kingdom, animal food being derived from the vegetable. Third, except fungi and algae, vegetables grow through the influence of the sun's rays. "The energy contained in the rays are fixed or rendered latent in the vegetables." When an arrow-bow is bent the force derived from the muscular action employed in bending it is stored up, ready to be liberated when the trigger is pulled, and the force given to the arrow when it is launched is neither more nor less than that which has sprung from the muscular action employed in bending the bow. The same is true with vegetable products; their formation is coincident with the disengagement of oxygen from oxidized principles, and the development of combustible compounds. To effect this disengagement force is required. Now, the force so employed has its source in the heat and light evolved from the sun, and exists stored up in the product ready to be liberated on exposure to conditions favorable to oxidization. Our coal fields represent a vast magazine of potential force drawn ages ago from the sun's rays, and capable at any moment of being set free by the occurrence of oxidation. Plants are media for converting actual into latent or potential energy. Animals reconvert latent into various forms of actual force; hence, the analogy between a steam engine and the animal system—both convert latent into actual force. In the animal, food is the combustible material, and oxygen is supplied by respiration.

From the chemical energy due to the combination, force is liberated in the active state, and can perform work besides manifesting itself as heat and in other ways peculiar to the animal system. The steam engine is supplied with fuel which is the result of vegetation; it has the same respiration air as the animal, and from the combination in

burning, heat is produced, some of which is lost, and some applied to mechanical work. Helmholtz says, the animal economy is more perfect than the steam engine in its capacity to turn force to account. It can utilize one-fifth of the power of its food, while the best steam engine utilizes only one-tenth—the rest escaping as heat. It is easy to see what an important food air is. We refer our readers to Pavy's admissible work itself. The scope of this part of our subject ranges into the most abstruse fields of science, showing how deep a problem food is.

As a physiologic, or sustainer of functions, or developer of organs. Of course, if all food is withheld, no function can be exercised after a time; but let us look at the functions—secretion and excretion—cerebration or nerve force—respiration—digestion—locomotion and circulation of the blood.

1. *Secretion.* This is a wonderful process. A cell that secretes milk possesses no visible difference from one that secretes as far as contents are concerned. The bile cell is more regularly polygonal than the milk cells. Both secretions are formed from the blood, yet the protoplasm (protos first, plasma mould or substance,) of the milk cell selects the material from the blood stream, and elaborates a liquid containing every element needful to make bone, muscle, sinew, nerves, cartilage, and every variety of tissue formed in the system, including the blood itself. Here is wrought an every day miracle on which the existence almost of our race depends! Theist and Atheist both agree that the protoplasm of the epithelial cells of the mammary gland is the active agent in this wonderful physiological chemistry. We that believe in God say, that here we are on the confines of the secret recesses of the Almighty, and that this process exemplifies the truth of Scripture, "For in Him we live and move and have our being." If not so, what, or who is the power acting behind and through the protoplasm?

We look out on a rich landscape in June, and note the herds of cattle clipping the luxuriant grass of the fields.

Later in the day we note their recumbent posture and rumination. Still later we see snow-white foaming milk as the product of the dairy. Now is not the transformation from the grass to the milk miraculous if it was not so common? We cannot imitate this phyto-chemistry in a laboratory. But how can we cause the animals to produce the best and most milk? Thousands of American dairymen have been at work answering this question, and it is solved. After allowing for differences in breeds and the individuals of these breeds, the interest of the milk producer centers upon the food. It must be ample, in good condition, served in a timely manner, and most important of all, it must be rich in all the chemical ingredients that are found in milk. There is room for much variation within certain limits, but fodder that is poor in mineral constituents will not answer. Hence, when drought diminishes the natural aliment of bovines, we find the dairymen giving out the tegumentary portion of grain that man rejects in making flour. Also they give excellent roots, rich in organic and inorganic constituents. They are carefully protected. When the natural aliment is thus supplied to healthy animals, experience proves that the satisfactory conditions have been realized.

The same general rule holds true of other secretions; they are all liable to vitiation unless the blood that supplies the respective glands contains the elements whence the individual secretion can be organized; so that while we are powerless to create a cell of ourselves, or to make it secrete milk or other liquid at will, we can limit or destroy or increase production by the way in which we feed. If this is so, is there not upon us a great responsibility? Does it not behoove parents and others to inquire as to these things, so that they may properly feed those in their charge?

2. *Cerebration or nerve food.* In point of fact the nervous system is paramount; without it, the bony, muscular, vascular, secretory, tegumentary and other systems are useless. In the nerves resides the man himself. We can

suffer the loss of limbs, organs, but who can survive without nerves? Starve them and partial death ensues. As we can feel the bony system, so we can feel the nervous. Perhaps no idea in relation to food of late years has sunk deeper into the public mind than that attributed to Agassiz, to wit: that fish is good brain food. We have seen it denied that the professor ever made such a remark. It is strange if he did. See the analysis—(Pavy on Food, p. 171.)

Of white fish—whiting, haddock, cod, sole, turbot, brill, place, flounders, halibut, &c.

Nitrogenous matter,	18.1
Fat,	2.9
Saline matter,	1.0
Water,	78.0
	100.0

Salmon. (Pavy.)

Nitrogenous matter,	16.1
Fat,	5.5
Salts,	1.4
Water,	77.0
	100.0

Mackerel, herring, sprat and pilchard rank with salmon.

Eels.—Nitrogenous matter,	9.9
Fat,	13.8
Salts,	1.3
Water,	75.0
	100.0

Fat is counted as nerve food, but butter is all fat. Cheese is 24.1 per cent. fat. Cream, milk—eggs contain more than both. Besides, wheat, rye, barley, maize and oat containing the brick-like cells of gluten, rich in phosphates are better nerve food than fish. As we remarked, the æsthetic standard of whiteness requires the ablation of the gluten cells, because they make the bread dark colored. Now perhaps the price paid for adhering so closely to our stand-

ard of excellence without regarding other standards, may be more clearly understood when it is stated that in 1000 grains of wheat there are 8.2 grains of phosphoric acid; this is equivalent to 150 doses of phosphorus when separated. 1000 grains of flour contain 2.1 grains of phosphorus, so that when a person wishes to take phosphorus in large quantity and in an assimilable form, one has only to eat wheat bread unbolted. Now, as the prevalence of insanity in modern times is somewhat alarming, and the best regimen for the feeble-minded and idiotic is to live on a diet that includes the normal amount of the mineral salts—is it too much to connect the excessive use of flour with affections of the nervous system? Fish is better than flour as a nerve food.

3. *Respiration.* Though there may be other fire places in the human body, the lungs are the chief seat of combustion by the union of food with the oxygen of the air respired. Also that sugar is the form in which food becomes lung fuel. The liver is a double gland, (Salisbury)—one forms bile, the other sugar. The portal veins carry the blood loaded with sugar from the liver to the lungs, where it is burnt up as fuel under a steam boiler. Both processes are not equally intense; one is slow and the other short, but the chemical results are all the same save in degree. Suppose no sugar or starch is taken as food; the liver will manufacture enough for the lung furnace. In case there is an excess of sugar after the normal utilization, it goes to form fat, and this state of things continuing, fat is deposited where it ought not to be. Hence sometimes we have Bright's disease, apoplexy, softening of the brain, and heart texture, &c. As things now are there is little danger of a lack of starch or sugar in the food—it lies in the opposite way.

4. *Circulation of the blood.* The main agent in this function is the impulse given by the heart's contractions. The blood runs with the velocity of a race-horse. Dr. Harriman estimates that if the arteries, veins and capillaries

of one man could be put into one straight line, they would reach three times round our globe! The pressure of the blood is at least 2.5 lbs. to the square inch. The accomplishment of the circulation of the blood with such velocity and force, would be a miracle were it not for the 45,000,000 examples found in our nation. Just as the engines in the Holly system must have force enough to elevate the water and drive it through the pipes, just so must the heart have power sufficient to keep the life-current through the billions of blood-vessels. If the heart is weak, we find a lack of heat in the extremities, a pallor of the skin, generally combined with a state which, for the want of a better name, is termed "nervous prostration." This condition is well named, for give the heart plenty of nerve force and there will be less trouble with the circulation. So that the feeder must consult the neurotic aspect of food if an energetic circulation is required. Experience shows that the heart is well sustained by animal food which develops muscle and nerve. According to Dr. Salisbury, a slow beating heart is undesirable. It should contract he says, at least 72 times a minute and with force. Less rapid pulses are abnormal, while quicker pulses without fever is a sign of weakness; also the writer has found the best treatment for permanently cold feet, to consist in the use of animal food exclusively. Starch food has heat enough but does not confer nerve force nor make muscular fiber.

5. *Locomotion.* Assuming the bones to be in a normal state, we locomote by means of muscular force governed by nerve force. This division of our subject might have come under the last head. It includes pedestrianism, rowing, climbing, bicycling, ærostration when the force comes from the flyer, swimming, health lifting, jumping, skating, fighting, and any other motion by which man changes his position in space by his own efforts. Now oarsmen, prize fighters, and pedestrians have lately filled a large place in the public eye. The contestants pay strict attention to their food; they judge it not from the æsthetic view. We

hope that the views of these classes of notorieties in relation to food will be regarded. It seems a small matter so far as any positive good is concerned, that A vanquishes B in a competition contest with feet, oars, or fists; but if the people learn from A's victory how to fit for locomotion, in the wide sense of the term, we can see that the national fame of a Hanlan or a Weston may be of more permanent value than the results we find recorded in the world's diary of events. The lesson is that *food* is a prime element in life. Cæsar's soldiers were conquerors because of the whole wheat food. British soldiers conquer because of their animal food rations. Dr. Livingston says, that the Makololo conquer because of animal food. Business men conquer because of their food. Porter-house steak lies at the foundation of more good bargains than doughnuts or hot flour biscuit. Feed Hanlan and Weston on cake and crackers and their laurels would soon be lost. "*Mens sana in sano corpore*," is what they need but they can't have them when feeding on impoverished food.

6. *Digestion.* A food that passes the æsthetic, chemic, and kinetic tests, and digests well is fit for royalty. If the object of food is vital, the repair of wasted tissues, the building up of the different systems, fuel, &c., then other things being equal, that aliment is the best which contains all the necessary elements, is easily, readily and mostly assimilable. On these grounds, animal takes the preference of vegetable. Muscles are easiest and soonest digested. What normally happens when a full meal is partaken, according to our present state of knowledge is as follows: generally, the fluid ingesta immediately enter the blood through the gastric walls by exosmose. Next we have the secondary digestion, circulating-function. By an unknown mysterious but probably simple process, the stomach is deluged to the amount of quarts, with a liquid, freely and quickly poured forth from the gastric walls. After a time, set by in some unknown power, this fluid is reabsorbed into the circulation of the blood, bearing the dissolved portions of

the lean meat. Again, follows another pouring forth of the gastric deluge, the digestion of the lean meat, the reabsorption and so on. Starch, fats, and fibrous tissues are digested by the buccal, pancreatic, bile, and intestinal juices.

There are other processes, but the main point we would make, is that lean meat enters the blood in a shorter, quicker manner, and then it furnishes the most material to make muscle and nerve. In former times, strong differences of opinion have existed. Vegetarians have, and do now insist that no animal food should be eaten. We have no intention of engaging in the controversy, but would beg leave to state our belief in the Salisbury dictum, that two thirds animal and one-third vegetable food is a good combination for health.

The effect of cooking is to render the food more soluble. Starch has to become sugar or dextrine before it becomes soluble. If this is done by heat outside of the body, so much work is accomplished toward digestion. Iodine acts on cooked starch like uncooked. We have found that uncooked starch will polarize light, while cooked starch will not affect polarized light. This is seen in marked character in the ordinary bean; the starch grains are arranged into oval and ovoid bundles much like eggs in a basket, only the basket is continuous like a closely fitted envelope. The envelope is transparent, thick, tough, and made of cellulose. It resists the heat—hence the long time required to cook beans. After cooking, the outline of the grains is broken down and the envelope filled with a homogenous mass. When the cooking is not completed the peripheries of the starch grains are distinct and clear outlined and polarized light as aforesaid. Starch is called a colloid (glue like,) and not crystallizable. Its cousin, sugar, is a crystalloid, capable of crystallization. The digestion of the gluten and phosphate cells is not well understood. The cells that line the alimentary canal and secrete the digestive juices, have another function; that of absorption. They have an autonomy and select or *elect* (if

you please,) the materials they choose. Why, and how this is so, is one of the riddles of protoplasm. The selected food is thus admitted to the lacteal and blood circulation, and carried over the body to supply waste of material, heat, force, &c.

It seems wisdom to ask in relation to food after it has passed the æsthetic tests, does it assimilate well, enter the circulations readily and with the least nerve force during the function we call digestion?

FOOD A POWER AS A CAUSE OF DISEASE OR PATHOLOGIC.

Dyspepsia (dys, difficult—pepsia, digestion,) depends on a sickness or disease of the eater or some defect in the food. The stomach and intestines may be functionally or organically diseased, or these may cause general condition of the body that incapacitates the stomach for digestion; but this is too purely a medical topic to be dwelt on here. We pass to the faults of food as pathologics. These arise from food being imperfect in itself or in cooking. It is a matter for congratulation that improper aliments usually betray themselves to the senses, and are rejected unless necessity force their use. For example, rotten potatoes, tainted meat, mouldy bread, soured milk, decayed eggs, &c. On the other hand, some food that is very agreeable acts like poison. Again some food is poisonous to one and not to another; this is not always explained. The dyspeptic often craves what experience shows will cause a diseased action. Lobsters, shell-fish, pork, veal, some kind of game, cheese, raw and unripe fruits, furnish labor for physicians. So also taenia, trichina, are found to come in meat, especially when eaten half cooked or raw. The advantage of cooking meat in relation to parasites, consists in coagulating the albumen of the parasites by 212° Fahr. In Abysinnia tape-worm prevails. This prevalence is supposed to be due to the habit the Abysinnians have of eating beef muscle raw and quivering from the live bovines standing at the door! But the question of interest is, can food such as is ordinarily employed produce disease?

In answer to this, Dr. Salisbury points out that strawberries eaten in excess have produced clots (thrombi,) in the blood, which, when caught in a blood-vessel and stopping it up are called "embol;" or plugs; this pathological state is termed *embolism.* The writer has verified this effect of strawberries. There are other causes of embolism, as the rheumatic diathesis, &c. Majendie fed dogs on flour solely—they died in the course of forty days with all the appearances of starvation. The corneas of the eyes ulcerated and the humors were evacuated, causing blindness. Hence the writer has queried if the use of flour too exclusively might not cause diseases of the organs of vision. On the other hand, Majéndie found that dogs fed on wheat thrived. Food containing fat producing material may be expected to induce fatty degeneration of tissue as apoplexy, Bright's disease, weakened heart force. So tumors or abnormal enlargements in some instances are designated by Dr. Salisbury as diseases of nutrition, due to the excess of the carbohydrates in food; on the principle that a man who undertakes to raise potatoes, for example, in ordinary soil without manures, (soluble mineral food,) he would expect the vegetation to be ill-developed, and subject to organic diseases in the form of excrescences and abnormal formation. Besides, he would find the plants infested with parasites that victimize their hosts.

As the outlook is now, it seems more than probable that a large variety of fatal diseases of man are due to parasites as a result of removing mineral salts from normal food. Beale has argued that because many parasites are harmless, therefore all are, and hence the idea of disease being caused by parasites as fungi and algae, is to him preposterous. It has not seemed to occur to this distinguished gentleman that the distinction of good and bad applies to all things of any class. As we have some phanerogamous plants, (trees, shrubs, &c.) noxious and some innoxious, so it is reasonable to suppose that cryptogams, (fungi, algae,) are subject to the same distinctions. In fact, many people have been re-

ported as poisoned or dying from eating mushrooms. These simple facts show the fallacy of Beale's reasoning from analogy.

One of the most startling of modern diseases arises in that of Dr. Salisbury in relation to the causation, by feeding alone, of consumption. Were we at liberty to make full statements, it would show that he has demonstrated the synthesis of the most terrible scourge of the human race; also how to treat the disease in this principle. When his report is published, we think that this addition to our knowledge will be ranked as one of the foremost of the age. There is good reason to believe that cancerous affections are mainly due to feeding. Pathologists agree that cancer is a disease of *nutrition.* The tissues seem to be laid down under mob law; they riot without any governing or controlling force. In other words, the influences that keeps our bodies from being, for example, twenty feet in length, or our arms from being ten feet long or markedly symmetrically developed, is like the one that the condition we call cancer violates. The body system is like the body politic; it has laws that must be obeyed or else tissue nutrition ruin results. Now as food is the main factor in nutrition, the rest of the proposition is evident and comes under the next head.

Food is a Power as a Therapeutic.

Organic disease is characterized by abnormal structural changes. What daily influence has more power over the body structures than food? It has to do with all. It goes to the intimate intersticial substance of every tissue. These change continually with great rapidity. Dr. G. B. Harriman, dentist, Boston, reports that a marked change from the chalky, soft, solid condition, to the firm, fibrous, tough texture of dentine has been observed by him in the space of three months. If such are the changes produced by feeding chemical food, how rapid must be the changes going on in the soft textures of the body! Indeed, the old idea that our

bodies are renewed once in seven years, may yet be reduced to as many months. Now in cases of organic disease, by regulating the diet according to the general principles here laid down, the writer finds that abnormal growths which he had every reason to believe were malignant, have disappeared, and this in so many instances as not to be a mere coincidence.

The late Dr. Worthington Hooker was one of the pioneers in the reform of the diet of the sick. His idea was to give food liberally. He combated the prevalent notion that the sick need "light food." Starches, gruels, and jellies, certainly pass the æsthetic tests, but fail in the chemical; moreover, being mainly carbohydrates, they are apt to undergo saccharic acid fermentation in the alimentary canal, with the result of paralyzing the walls of the canal by the local action of carbonic acid gas. The peripheral cells lose the power of selective absorption, and take up materials not wanted. On the other hand, animal food is mainly digested in the stomach; not readily ferments, and is a good chemical food. It takes less nerve force to digest it. Its nourishing quality, bulk by bulk is many times more than the starches and sugars. If "light food" means an easily assimilable, small bulk, most nourishing aliment, animal food, must be termed "*light*"—popularly it has been thought "too hearty." This is a mistake, and thousands of graves have been filled by this doctrine. It is one of the best signs of the times that the sick get something to eat. The therapeutics of food never was better established than now.

In conclusion, we would say that we have endeavored to throw some light on food. We think that responsible people should not allow themselves to be solely influenced by the æsthetic view.

At the conclusion of the reading of the paper of Dr. Cutter, Dr. Coy moved that a vote of thanks be extended to Dr. Cutter. Carried.

The President appointed as Committee on Publication: Drs. H. M. Schooley, *Chairman ex-officio*; J. B. Hodgkin, C. E. Duck.

Drs. R. Finley Hunt, B. F. Coy, and T. S. Waters, were appointed as Committee on Scholarship.

On motion of Dr. Winder, it was agreed to read over Dr. Cutter's paper at our next meeting and discuss it.

The Association then adjourned *sine die.*

ARTICLE II.

*S. Sexton, M. D., on Diseases of the Mouth.**

BY PROF. HODGKIN.—*Review.*

The frequency with which diseases of the oral cavity and more especially of the teeth, excite affections in parts more or less remote, has of late attracted the attention of medical men, (we use the term, as contradistinguished from dentists,) in a marked degree, and their knowledge of these subjects has been freshened, as the more candid of them readily acknowledge by the original researches of our specialty. It is well that the partition walls which in the past have separated medicine from dentistry are thus gradually thining, by a sort of process of absorbtion, the regular medical practitioner deriving some benefit, to say the least, from the humbler and possibly, slighted labors of his dental colaborer.

But it seems that while this is true in at least some degree, and that dentistry is possessed of some facts which medicine is glad to use, that in the main the knowledge of the principles which underlie the rational practice of dentistry, and a knowledge of the more prominent facts in dental pathology, are very obscurely understood as yet by medical men generally. We arise from a perusal of the article by Dr. Sexton on "affections of the Ear arising from Diseases of the Teeth," with the conviction that a medical man is not fully competent to criticise the work or the

*"On affections of the Ear arising from Diseases of the Teeth. S. Sexton, M. D., Surgeon to the New York Ear Dispensary," etc. —American Journal of Medical Sciences, Jan. 1880.

methods of dentistry; and indeed feel assured that no one but a daily worker in the mouth can well judge of the significance of the diseased conditions which there arise. And in the outstart we disclaim making any apology or defence of dentistry. Its faults are prominent enough, and the damaging character of the work of many of its practitioners is sufficient to call for as severe strictures as the writer of the article under review indulges in. Indeed it is well once in a while to read what outsiders think of us and our work. But the medical man must, of necessity be a sciolist in matters of dentistry, and such Dr. Sexton proves himself.

We have headed this as quoting the title of a paper on "diseases of the mouth." Such in fact the paper is; for while professedly a treatise on "affections of the Ear arising from diseases of teeth," the writer so soon abandons his subject and discusses at large the injuries which are done and may be done by injudicious or incompetent dentistry, as to justify the first title.

Still this is a monograph of value. There is no dental student but can profit by the introductory parts of it, treating of the phyisological relations between the ear and the teeth; and a careful study of the very rational pathology ennunciated cannot but point to a more successful treatment of diseased conditions. The quotations from Woakes and Foster as to the association of the vaso-motor with the cerebro-spinal nerves, and his comments upon these, are exceedingly interesting. He thinks too, what seems possible, that even cases of "deaf muteism" may be caused in infancy by the irritant action of teething, and he quotes from Hilton on "Rest in Pain," one of the cheap series of books issued by Wm. Wood & Co. last year, on the characteristic ulcers of the tongue due to irritation by a jagged tooth.

But when Dr. Sexton comes to the description of the treatment of diseases of the teeth, he certainly betrays the lack of accurate knowledge of the subject—possibly

possessing as much as most men outside the practice of dentistry—but assuredly not sufficient to justify the assertions he makes, or the conclusions he arrives at. He says: "I shall only allude here to those *known* to be injurious, premising, however, that future investigations may, in throwing more light upon the subject, determine that other fillings are inimical to health." The assumption here, that investigations already made have determined the injurious nature and action of any of the materials now used, as it seems to us, is not proven by any of his strictures on the means or methods at present practised. We quote from his text:

"The most universally used filling, excepting perhaps gold, is an amalgam consisting of about *two parts of tin*, *one part of silver*, and as much mercury as will cause the mass to adhere together. Actual experiments show that 0.12 grammes of the tin and silver mixed as above will require 0.09 grammes of mercury to form the cohesive mass used by dentists for filling teeth. When ordinary care is not exercised in the preparation of this material a much larger quantity of mercury would remain. The quantity of this amalgam inserted in a single tooth varies from 0.60 to 4.00 grammes, [10 to 60 grains,] and in the mouths of many individuals as much as 20.00 grammes, [300 grains] have been found inserted in the teeth. This amalgam, composed so largely of mercury, is usually much exposed to the attrition of mastication and the movements of the tongue and cheeks. The free mercury which it was found to contain by Dr. Wm. Stratford is worn off in small particles by the friction in the mouth. These particles, when submitted to dilute hydrochloride acid, yield a chloride of mercury. That toxic effects may resist from wearing these fillings in the teeth is, therefore, established."

But is it established? Certainly not from the statements or conclusions of Dr. Sexton. For, in the first place, the amalgams in common use are not composed of tin and silver mainly, but of other metals alloyed with these—not that there is anything detrimental to the constitution in this combination,—but that recent careful investigations have shown that other combinations of metals produce

better results. Nor is it probable that, save in exceedingly exceptional cases, will amalgam fillings be found to weigh one-eighth of an ounce, as asserted by Dr S.

But it is to the statement that " toxic effects may result " from the attrition and loss of these fillings, and the chemical action by dilute hydrochloric acid, upon the particles thus worn away, that our attention is attracted. Dr. Sexton has well said, " *may* result ;" for he will hardly find any-one at this day to state that such effects *will* result. It is perhaps, among the possibilities; certainly not among the probabilities. In the first place it is known that the old theory, so much harped on by the opposers of amalgam in the past, when neither its qualities nor capabilities had been at all carefully studied, that there remains " free mercury " in the filling, is untrue, except possibly where the grossest carelessness in manipulation exists. The combination between the finely divided metals and the mercury is exceedingly close, and only separable by the action of high temperature (nearly red heat,) or the action of acids so energetic as to attack the alloys themselves. Indeed the whole amalgamated mass may and should be considered an alloy, one part of which is as resistant to acids as another.

The assertion that there is loss of the substance of the filling by attrition, would be hardly made by one familiar with the subject. Even soft gold is with exceeding slowness worn away, when the opposing tooth grinds upon it; soft tin is known to last for years; and amalgams, at least those in ordinary use, are of all fillings the hardest. It could hardly be demonstrated, we think, that an ordinary amalgam filling would lose the one thousandth part of its weight in a year; and although Dr. Sexton quotes elsewhere in his paper to show that dilatation of the pupil has been caused by the four hundred and sixty thousandth part of a grain of atropia; even he would hardly assure us as of the toxic effect of the infinitesimal dose of chloride of mercury obtained from the attrition, etc., of an ordinary amalgam filling. The statement, in the same connection, that

amalgam fillings have the effect to weaken the enamel, must be derived, as doubtless are the other supposed facts cited by Dr. Sexton, from the writings of the older opponents of amalagam, when from prejudice or antipathy, or a want of experimental knowledge of the facts in the matter, statements were made and left unrefuted, possibly until the present day.

Passing further, we notice the statement that when fillings are in the teeth and plates (metalic or vulcanite) are worn, the conditions for harm are yet more favorable. Our author has evidently here in mind the theory of "galvanic action," which, while it may not be without its claims to be heard, is, we are sure vastly overrated by those who advocate it. We have no disposition to begin an argument on the subject of the "New Departure," nor dispute the theories that there are galvanic currents between tooth substance and fillings, but it is hardly true that the presence of at least a vulcanite plate could complicate matters, in this direction at least.

We pass to the subject of plates with artificial teeth attached and their wearers, on which our author asserts that "it is believed that the health of a large number of these people is *imperiled by the material* used in the construction of plates, as well as the methods used in fitting them to the mouth;" and he claims that the amount of injury thus done is not likely to be known, from the fact that those injured do not recognize or are reticent about the injury. We have no defence to make of the practices alleged by Dr. S. to be in vogue, such as "plates put into the mouth over carious fangs, inflamed gums, and collections of tartar completely encasing them, and retaining the foul secretions and decomposed particles of food usually present." This is certainly very bad practice, and we hope that the number of dentists who are thus maltreating their patients is exceedingly small; though it may be well said in their defence that much of the blame attached to the dentists should be laid on the patients, who are notoriously careless of cleanliness.

Apparent stress is laid on the fact that in one of the cases cited by our author of detected disease, the dentist who made the diagnosis was also a physician; although the diagnosis in question could readily have been done by a student, and the unconsciousness of the patient himself to the abnormal condition of affairs is hardly credible. But it is with the greatest severity that Dr. Sexton attacks compounds of metals in the mouth, and he gives to the alleged fact that when a gold plate touches an amalgam filling, the latter is rapidly corroded, especial importance; and the same result he affirms ensues when amalgam and gold fillings touch each other. *This latter fact we have never been able to verify in a long practice,* nor have we ever met a practising dentist who could do so.

Vulcanite plates, however, are the subjects of the severest attack of all by Dr. Sexton, and to this we do not object, if it will enlighten the public mind upon some of the questions concerned with it on which at the present those interested seem in the dark. We have no defence to make of the "vile rubber," and question if dentistry has really gained by its introduction. But Dr. Sexton is not a "vulcanite dentist," and certainly has not studied the question in its real significance, else he would never have been betrayed into the errors which beset his article. After commenting upon the action of the fluids of the mouth upon low grades of metal plates, he states that when more than one kind of metal is used in their construction, this fact may cause chemical action, especially when gold touches amalagam, and he italicises these words: "*the well known fact that when two different metals are brought into contact in the presence of a dilute acid or solution of a salt, a current of electricity is generated,* should lead us to infer that their harmlessness to either the sick or well is problematical."

Problematical indeed! But the relation of cause and effect here, as elsewhere, is not known certainly, and until it is, it is hardly worth while to drag in, as does our author, the old theories of Burc, revived by Charcot and others,

for the sake of illustrating so doubtful a subject. While people are subject daily to the action of agents ordinarily known as noxious or toxic, and become tolerant of them, even to the enjoyment of health, the infinitesimal dose of a nameless something begotten of an imperceptible and intangible galvanic action should hardly be the subject of so heavily an underlined paragraph. He may well say that "a further consideration of the subject would lead us too far."

In the next paragraph he puts down the vermilion in vulcanizable gum—that prepared for dentist's use—as equal to both the weight of the sulphur and caoutchouc. The text books give us as a formula: Caoutchouc 2, Sulphur 1, one and one-half part of this mixture and one part of Vermilion. Or Caoutchouc 48, Sulphur 24, Vermilion 36. Of course when the unvulcanized gum, thus prepared is "chewed for several hours, it yields a salt of mercury," as the mass has little cohesion, save the tenacity of the soft yielding gum. The question is vastly different when the compound is vulcanized.

"To bake this soft material into plates of sufficient hardness to support artificial teeth, a temperature of about 160° C. is required. *This degree of heat is not sufficient to completely volatilize the contained vermilion and sulphur.*"

Of course not! When the first substance is only separable from its compound association with sulphur at or about a red heat, and not volatile except when heated to decomposition, and if it were volatilizable, and this did occur, the result would be a *black plate*, (as rubber, minus vermilion, is black, or nearly so;) and the sulphur, instead of passing off by the heat, is combined with the gum, making a chemical union with it. Were it to be volatilized even in a small degree, the result would be a useless and unvulcanized plate, *as the presence of sulphur is absolutely necessary to the vulcanizing process.* Dr. Sexton evidently is not posted on the subject he is writing of.

Just here we quote, not for the benefit of Dr. S. alone, but

for the many who find in vulcanite hidden and dangerous poisons, a paragraph from Makins, whose work on metallurgy is a standard one. He says: "Neither water, alcohol, the alkalies nor the mineral acids singly, have any effect upon vermilion." Dr. Sexton seems aware of the negative action of the acids in question, but charges the poisoning to the alkalies, or at least says, these break down the compound, and the vermilion thus liberated acts as a poison.

Further, the vulcanite plates besides "yielding a poison," are charged with injury to the health by reason of the imitation they produce; one-third of those wearing them, he claims finding them to produce this effect. This result is said doubtless justly to be attributable to the non-conducting properties of the plate. But when "*the close contact of these plates*" is made a cause of injury, the dentist will smile; as also when it is gravely stated that "the parts are often bathed in pus!" Of the cases cited by the Dr. we cannot dispute the facts, but it is odd that they occur in his part of the country only; but that a vulcanite plate worn in the mouth should "cause nausea, vomiting and purging, with stomach painful to the touch, the symptoms increasing in severity from day to day; the mouth swollen, sensitive, feverish," etc., with a slow recovery, followed by a cutaneous eruption lasting some weeks—all this is very curious, to say the least.

The only American author quoted, of a long list of authorities by Dr. Sexton, is Prof. Abbott. In conclusion we feel sure had Dr. Sexton allowed some one well posted on the subjects he has floundered amongst to have written up the part of his article we have thus attempted to review, it would have been better for the subject discussed. It is well to know however, what individual men are saying and thinking about our specialty, and possibly it may be well for them to know what we think of their cogitations. It is always bad to go out of one's line to discuss a subject; the liability to mis-state and fall into error becomes a certainty almost, and Dr. Sexton has proven himself no exception to the rule.

ARTICLE III.

Alveolar Abscess.—Origin, Prevention, and Treatment.

BY JNO. H. COYLE, D. D. S., THOMASVILLE, GA.

There is, perhaps, no subject in the whole range of Dental Pathology which has claimed more careful study than the one which heads this paper; and the result of individual observation, has given to the profession an accurate knowledge of its pathology, and a treatment which, with few exceptions, is specific. Alveolar Abscess is caused by Periodontitis. I prefer this term, because it locates the lesion, and at the same time suggests its pathology which is inflammation of the periosteum lining the alveolus.

The fangs of the teeth are in close contact with highly impressable membrane, and their relationship is so intimate, any disturbance in the one, is followed by a disturbance in the other. It is not necessary for me to enumerate all the causes which may produce this inflammation. The most common cause is from an inflamed or devitalized nerve of a tooth. Whenever the nerve of a tooth becomes devitalized from any cause whatever, and is allowed to remain in the tooth, sooner or later, will produce an alveolar abscess.

The dead nerve under this condition, like any other living tissue, when isolated from its source of vitality, is under the dominion of the chemical forces, and disintegration follows. The products of this disintegration are pus and fetid gas. The gaseous product is highly irritating to the periosteum, which it reaches through the special foramen of the tooth. Then the truth of the old medical axiom, „ *Ubiirritatio ibi fluxus*," is fully demonstrated, for this irritation at once invites an increased flow of blood to the seat of the irritation. Then plastic lymph is effused around the inflamed spot, which becomes organized and forms a cyst that catches the product of this inflammation—pus. Then ulceration follows, which gives a free outlet to the confined pus by a fistulous opening through the gum. This

is ordinarily the usual course, and result of alveolar abscess, where there is no remedial interference.

As I have stated, this is the exciting cause of the largest number of cases which come to us for treatment, but, we are also called upon to combat periosteal inflammation which is produced by other causes, and if not arrested will result in the death of the nerve and bring about alveolar abscess; so that, under the head of prevention we have to combat Periodontitis. I shall simply give my treatment, remarking that, it is not essential to distinguish the cause of Periodontitis, (unless it proceeds from a devitalized nerve) whether from thermal irritation of the nerve pulp through metal fillings or mechanical violence—the principal is the same, so far as the medical treatment goes. My treatment is local and constitutional. I first paint the gum over the part affected with equal parts of Tinc. Iodine and Tinct. Aconite root as usual, allowing it to dry before allowing moisture to get to it. I then give the patient two powders of saccharated calomel, with directions to take one of the powders at once, and if necessary to take the other powder at an interval of six or eight hours. My experience has been that, it is not often necessary to take but one powder. It is prepared as follows:

Calomel, - - - - - -	grs. vi.
Powdered White Sugar, - - -	" xii.

Rub thoroughly together into mortar and divide in twelve powders.

This looks like Homœpathy, nevertheless, it operates very actively. One of these powders taken on an empty stomach on retiring at night, with most persons is an active purgative. The combination is not original with me. I believe Dr. Batty, of Rome, Ga., first suggested it. The known therapeutical tendency of mercury to affect particularly and prominently the dental tissue, led me to believe that it would be a useful remedy in these cases, and I have found it to be all that could be desired, if its exhibition is not delayed too long. Where it is not desired to use a

purgative, I give forty to sixty drops of the Tinct. Gelseminum and repeat in one hour if necessary. This often brings needed relief, but is not so certain as the saccharated powders. In addition to this, the exciting cause, if known, must be removed. If it is not, a recurrence of the inflammation may be expected. If it proceed from thermal irritation through metalic fillings, they should be removed and a *non-conducting* substance substituted therefor; and so on through the entire list of causes, whether local or systemic, the proper steps should be taken for their removal. After all efforts fail to control the inflammation, which will sometimes be the case, and the formation of abscess is inevitable, then the only course left is to expose the nerve pulp and devitalize it or extract the tooth. If the first course is decided upon and every part of the devitalized nerve removed, the tooth properly treated and filled, it may be confidently expected that no abscess will occur afterwards. I will now offer some remarks on chronic alveolar abscess. These cases present themselves under one or two conditions namely: a cronic discharge of pus through a fistulous opening from the alveolus or through the cavity of decay. The latter I will designate as closed abscess. The first thing to consider when these cases present themselves is whether it will be advisable to undertake any treatment, other than extraction. All those cases of recent occurrence, on teeth which are sufficiently accessible to admit of the necessary manipulations, may be subjected to treatment looking to their cure, with the exceptions I will presently name. The treatment for abscess with fistulous opening in the gum is very simple and consists in the cure of a pus secreting surface within the alveolus, by the introduction of an Escharotic and antiseptic substance, of the many substances suggested and used for this purpose, I have found nothing superior to carbolic acid full strength, that is, Calvert's carbolic acid with just sufficient water added to make it retain the liquid form. I have never known it to fail where it was properly applied in a case where it was proper to apply

any medical substance. If the acid can be forced through the apicial foramen of the tooth, until it appears at the opening of the fistula on the gum, the one application will generally be sufficient. *There should never be any hurry to follow up the treatment by filling;* not less than a week should intervene and *three weeks* will be better. In the filling of these teeth, it should be borne in mind, that *there* is *no exclusive virtue resident in one material* used for the purpose, but, rather in the *manner* in which it is done. It is absolutely essential that it shall be done thoroughly and with as little violence as possible, making sure that the material used shall fill the entire fang, so that there shall remain no reservoir, to catch a subsequent secretion of pus. A large percentage of abscess managed in this way, are apparently cured and the tooth preserved for future usefulness. This cannot be said to be invariably true, for there is always not only a *possibility*, but a *probability* of a recurrence of the abscess. Those cases which I designate closed abscess. The great difficulty which arises from effort at treating this class of abscess, is the tendency it has to assume the acute form in these cases. When an introduction of the Therapeutic agent is made, and the cavity of decay through which the application is made is closed up for its retention. there is no outlet for the constantly secreted pus within, as is the case when there is a fistula through the gum, and we have a superventive of acute inflammation. Formerly I had a great deal of trouble with these cases, but for the last year I have succeeded in avoiding this trouble by the following tre..tment; after taking such steps as are necessary to give me free access to the fang canal, I syringe it out with alcohol, by means of an ordinary Hyperdermic syringe, and place a pledget of cotton saturated with the same into it and close up with cotton and sandarach varnish, or . fter cleansing the cavity as described I place a pledget of cotton saturated with chloroform in the fang canal and close as before, instructing the patient to return in two days, when I introduce carbolic acid, which

I continue to apply, say twice a week until ready for filling. The chloroform treatment *I regard as specific*, as I have never had a case to take on acute inflammation when it was used.

Now, as to the exceptions which should all be treated by extraction—1st. Chronic abscess of long standing. 2nd. When it is evident that a portion of the fang is necrosed. 3d. Abscess of the *Dens Sapientiæ*. 4th. Abscess of the Deciduous Teeth. 5th. All those cases where persons in whom they occur are of scrofulitic diathesis or having cochexia of body by inheritance, predisposing them to malignant growths.

I shall give my reasons for the fifth class of exemptions only, as it seems to me that one, two, three, and four are self evident to all who have had an extensive experience in the treatment of alveolar abscess. All of the Epulic growths of the Maxillary Bones, have their origin in the periosteum of the alveolus. Several cases of tumors of this character have come under my observation within the last ten years and were in my opinion, directly traceable to chronic alveolar abscess of long standing and the patients were of scrofulitic diathesis. All of these cases were benign in character, except one, and radical cure was effected by extracting the tooth and extirpating the alveolus in which the abscess was situated. The case excepted proved to be malignant, and has not yet terminated. The charcter of these Epulic growth, whether benign or malignant, is determined by the peculiar diathesis of the particular individual. Believing, that in these persons, chronic alveolar abscess is often the exciting cause of Epulic growths malignant in character, which may have a fatal termination, I have determined to treat them by extraction only.—*Dental Luminary.*

ARTICLE IV.

Cleaning Teeth.

BY G. A. MILLS.

(Read before the First District Dental Society.)

How many people who call upon the dentist for his services understand the full import of the heading of this article? How many dentists have anything like a fair degree of understanding regarding this matter? How many dentists make it the first object in their examination of the mouth? I think I can suggest a few directions that would come under the head of "practical hints to the dentist," and if accepted and followed, the result will bring so much satisfaction both to the patient and the operator as to permit of no future departure from the practice. I hear the remark all along the line, Who does not clean teeth? Echo answers, "Who does?" A few do; but close observation proves very conclusively that there is far from being anything like a respectable number who do set to work with the same degree of zeal that is manifested in the other departments of practice. Patients come to us to have their teeth examined, and the common practice is to look for decayed teeth. I say the *common* practice. Now, I do not think this is altogether so, because of ignorance or wickedness; and yet, to some extent, it may be a little of both. As dentists, we are morally bound to preach the gospel of saving the teeth, and also to be zealous for their *healthy surroundings;* for what does it profit the patient to have the teeth filled if the diseased conditions of the contiguous parts are sweeping them to destruction by destroying both the soft tissue of the gum and the hard of the sockets. "Cleaning teeth" has meant, heretofore, too much improving the facial appearance of a few front teeth—(A person going to a party or soon to be married, calls to get a fifty cent shine.) The operation of cleaning teeth means, according to the present-day standard, removing all debris

from the cutting edge to apex of the root (if it be exposed,) all corroded surfaces, all stains, &c., and to wind up with a final polish, particularly on the enamel surface. As a practice, this should be the first step, and then every intelligent observer can learn the real condition of the teeth. This operation is verily the true method of examination. Now, to make this effectual and appreciated, patients calling to have their teeth examined should be informed that an appointment must be made which, as a rule, they will readily agree to. At the appointed time commence and clean each tooth from A to Z. If there be deposits of salivary calculus remove them (I would say a-la-Riggs) by any method by which thoroughness can be secured. This being done, by the use of corrundum disks (to a large extent,) stains, depressions, defects of tooth structure, &c., can be removed. For giving a smooth surface, Arkansas stone disks, with the free use of water, are very efficient. A very effective method for polishing about the neck and other surfaces of the teeth, is to place a fissure bur in the engine and wind about it a piece of cotton, so making readily an elastic cone. Another valuable method is the use of the string and tape polish (which I described in my series of articles on the so-called Rigg's Disease, published in *Cosmos*, 1877,) to be used with moistened chalk and tooth powder. The final polishing should be done with the brush-wheel and the engine, using the polishing materials above referred to. Now, after this has been performed as thoroughly as it ought to be, and the beneficial result demonstrated, I think this method will impress the operator as of so much value that he will not hesitate to make it the rule of his practice ever thereafter; my word for it, as well as the testimony of those who practice it, no service performed in our offices will bring forth more evidence of real appreciation than this. A service of the nature I have described will, in ordinary cases, require at least one hour's time, but many cases will need much longer treatment. We will see, now, that an hour or more of the office time

has been consumed and acknowledged by the patient to have been well spent. I think we have that which will militate against the remark so often heard in our societies and from those who ought not to make it, viz.: "That the time spent in such operations is all very well, but the patients will not pay for it." This is not true; they will pay, and liberally too. This matter of cleaning teeth should be well considered by young practitioners, for they can in no way pave so ready and so sure a path to a successful practice as by starting in this way. This will be an easy thing for a young practitioner to do. Alas! how many a one pines behind the diploma hanging on the wall of his primitive office, because of watching and waiting for patients who so long delay their coming. I predict that he who adopts as his motto' "clean teeth," need have no fear for the full employment of his time. This service well understood, will give the practitioner greater success in his professional life than all theories of the so-called "New Departure" system could. A dentist deficient in all the departments of practice, and zealous in the cleanliness of teeth, will be more successful in saving them, than one more efficient in general practice and neglectful in this particular. Look through all the discussions of our societies, and how much is said upon this subject? Cleaning teeth includes also securing a healthy mouth, and it is the most practical question of the hour, which *must* and *will* in time be in advance of all others. He who holds the position of teacher in the schools should spend more time in impressing the importance of this practice on the minds of his pupils than is at present the case. I have visited some of the schools and have quizzed the students on this subject, and found that it was receiving but a passing word in the teachings. But I need not have quizzed to find that out; silent but undeniable witnesses told the *true story* as I passed from chair to chair in the clinical department. Not in a single instance did I find this matter receiving any attention. I would suggest (as the importance of this sub-

ject bears so fully on me at this time,) that some student in the institution should have a clinic on his own teeth *first*, by some one who has the matter at heart and understands the full import of it, and then have the student operate, ***each*** on the ***other***, and by this means an impression can be made which will transcend even an earnest effort in the lecture-room.

Up and down the avenues of our professional life we hear the declaration of those who have tarried long at the chair, that "Dentistry is a failure," "Sooner or later the forceps must come and put an end to the life effort." "Dentists do more harm than good," "Incompatibility of filling material," "Defective operative ability," "Cohesive gold," &c. Now let every one ask himself, "Have I given the attention to this subject which it deserves?" "Have I fully demonstrated in my practice the value of it?" Only a few days since one of our most brilliant fillers acknowledged that he had not given his attention to cleaning the teeth as fully as he felt he ought to have done. We must reverse the order of our clinics if we will make them most successful, and make this service occupy the first place in the clinic room—we will thus give it a potentiality that will be felt and be productive of great good. Until this is done, we make an almost useless expenditure of time and mental energy in trying to discover that which will put us in the way of solving the problem of saving the teeth, and will answer the question, "Why do teeth decay?" Of course, I do not mean to be understood that this practice alone settles the etiology of dental caries. As a truism—defective tooth structure admits of the possibility of decay, for the typic tooth will resist it. All unclean and unhealthy mouths are in a condition to accelerate dissolution of the soft as well as the hard tissues, and the result in the non-resisting constitution is general debility from a lesser to a greater degree. It is not at all uncommon to be able to trace directly to the unhealthy condition of the mouth and teeth local diseases of the eyes, ears, nasal cavities, and

vocal organs; while in not a few cases the mucous membrane is deranged from the lips throughout the entire track of the alimentary system. The more attention I give to this subject, the more I am confirmed in the belief that we have as yet but a faint conception of the deleterious effects of a diseased oral cavity upon the general health. We cannot be too zealous in following out the line of practice which I have recommended, for by it to us is committed the responsibility of keeping a healthy vestibule of this temple of the human body. I predict the time is not far distant when the general physician will be forced to take cognizance of this fact, and will acknowledge the results of an intelligent practice by us in this field, to a far greater extent than he now does. We have come to understand this, that *all* inflammatory action is chemical. In its incipiency it may be circumscribed, and, in proportion as constitutional resistance is present, it is held in check until an additional complication is coupled with the first invasion, when the inflammatory action becomes intensified. Nature s now called upon to do extra duty, and the rallying of ithe vital forces to the point of attack often reveals an unknown weakness in some other part of the system, which develops to such an extent as to produce general debility. —*Dental Miscellany.*

ARTICLE V.

Dr. Waters' Statement Regarding his Treatment of Mr. George Arthur Gardner.

Dr. Waters, of Boston, makes the following statement regarding his treatment in the case of Mr. George Arthur Gardner, of New York, whose recent death has attracted such wide-spread attention:

A great deal is being printed about the painful death of my kinsman and occasional patient, Mr. George Arthur Gardner, of New York. In such a case the investigations and discussions, instead of being conducted by irresponsible

newspaper reporters, who publish, with more or less accuracy, the results of random interviews, should be made by the legal authorities, and with due formality. I beg permission to say this much, at this stage of the *quasi* investigation, in your columns:

Mr. Gardner came to my office on the 9th of September (I not having seen him for eight months previously,) suffering from neuralgic pains in the head and jaws, which he referred to a decayed tooth in the right inferior maxilla, that had been giving him trouble for three or four weeks. He said two dentists had made applications to the tooth at different times within three weeks, but without giving him much relief. Noting a soft, silky shimmer of the skin of his face I asked after his general health, and found that as good as usual, with the exception above noted. He seemed sure that the pulp of his tooth was in a high state of inflammation, and asked me to make an application for the purpose of allaying inflammation, before operating, as he feared the pain. On examination, I found *no* exposure of the pulp, nor any apparent opening into the pulp chamber from this cavity. But a dark circle around a gold filling in the crown looked suspicious, and, as it had a dark line extending forward to near the edge of this cavity, with a decided cloudiness bordering either side, I inferred the trouble to be located there. I found, upon removing the gold filling, a very extensive decay beneath and around it, penetrating the pulp chamber, which was filled with fine particles of food in a putrid condition. This was all carefully and thoroughly removed, and the discolored walls cut away so as to give free access to the pulp canals in the roots, in one of which I found a small portion of live pulp. The others were filled with a mass of fœtid matter, which was very carefully and thoroughly removed and the whole treated to a bath of bi-sulphate of soda, and that was followed by a very thorough washing with the saturated *aqueous* solution of carbolic acid. These materials were allowed ample time in which to do their work of disinfection and deodori-

zation, and then the canals were filled with the soft, oily vaseline, and that protected by the form of oxy-chloride of zinc, called agate cement. When this had become sufficiently hard, the remainder, and by far the larger part, of the cavity was filled with Hill's stopping—a preparation of gutta percha. When I announced the completion of the filling Mr. Gardner seemed much surprised, and said that he had experienced no pain except when I was cleannig the canal, in which was a portion of live pulp, and that was of momentary duration. I was very careful not to wound the nutrient vessels of this small portion of humanity. Mr. Gardner was told that the entire operation was of a temporary nature, as the tooth was in an exceedingly precarious condition, and any operation while in this state, save that of extraction and replacement, would be of very doubtful duration. I also said that I wished to see the tooth again, in any event, before he went to New York that evening, that I might judge of the expediency of further treatment. In a few hours he came in again and said he thought I would have to loosen the filling a little, as he could not stand the pressure. I removed the gutta-percha, oxy-chloride of zinc, and washed out the vaseline. Then, fitting a piece of cork to the cavity, I made traction through it with a small syringe upon the contents of the dental canals. And, as it gave immediate relief, I decided that there was probably an oozing from the ruptured pulp vessels, and that it would consequently be improper to close the canals tightly, but that food and saliva must be kept out; so, after again washing with the saturated *aqueous* solution of carbolic acid, and applying a small quantity of nitrate of silver to the canals, I filled loosely the large cavity with Japanese bibulous paper, super saturated with vaseline, to the entire exclusion of air and moisture, yet not so as to prevent any gases or exudations that might develop in the roots from passing into the buccal cavity.

The same piece of cork was placed in the mouth of the cavity as a cover to the soft filling, and this condition was

found by Dr. Marvin, as the papers have said, intact. If I had been in the habit of using arsenic, which I discarded 20 years since, and was entirely unscrupulous as to its use, and had the arsenic at hand, I should *not* have used it in such a case. I saw no indication that arsenic had been used at all. There was no sloughing of gums between the bicuspid and this molar, as there would doubtless have been if arsenic had been applied to this dishing mesial cavity, at the treatment which it received previous to his calling upon me. If there had appeared an opening into the pulp chamber from this cavity, I should have suspected the use of arsenic and removed the tooth for treatment as the only way of reaching the trouble. The indications of inflammation around the roots were not strongly marked when he called upon me, nor when he left, but yet sufficient to warn me of what might possibly occur, and accordingly I gave him positive instructions, if the pain returned to him, to have the traction treatment of the canals used again by the first dentist at hand, as by it the inflammatory symptoms seemed to be readily reached and controlled. Up to the time when Lewis was called in, on Saturday, there is nothing to show that Mr. Gardner was suffering from anything more serious than a severe and very troublesome alveolar abscess, the pointing of which Mr. Lewis says he saw and treated. Just what his treatment was we are left to infer by the subsequent results. A dentist would have opened the abscess and removed its contents, disinfecting and cleaning it to its source, even to the canals of the tooth. Every dentist must have occasion to treat cases very much worse than anything described by Mr. Lewis at his first meeting with this case. Just here we want more light, and these questions suggest themselves: What time Saturday did Lewis see the case? What was his treatment? Is he a medical student engaged in dissecting? Did he make a feeble attempt to open up that abscess? And if so, what with? An instrument used in dissecting? How long, in hours, was it from the time of viewing the case Saturday

to the time in which he saw such dire results and condition on Sunday, when the pyæmia was marked and gangrene followed? Such a condition would be likely to result from the use of a dissecting knife that had not been properly cleaned, if used on tissues so engorged and clogged with effete matter.

I know of no other way in which such results could be obtained. I have seen and treated recently some bad cases of arsenical poisoning. The treatment is simplicity itself, as compared with that with which we have to combat the pyæmia of a dissecting wound. I am talking necessarily at random. Up to Saturday, the case was not, apparently, uncommon nor difficult to comprehend. What happened to him in the hands of this inexperienced medical student we do not know; we only know the sad results. For myself, I know, from more than thirty years of experience, that Mr. Gardner did not suffer harm from my treatment.

GEORGE FRANKLIN WATERS.

—*Missouri Dental Journal.*

ARTICLE VI.

Abrasion of the Teeth.

BY DR. HERMANN, OF HALLE, A. S.

Notwithstanding all that has been written and said concerning this subject, it still remains one worthy of mention, the more so as we are yet somewhat in the dark concerning different appearances in abrasion. As for instance: defects in teeth, which cannot be struck by their antagonists, etc. The case which I will here describe has reference merely to a natural and peculiar wearing off of the teeth, with, however, singular phenomena.

A gentleman about fifty years of age, who had occasionally suffered the loss of teeth, but who bestowed much care to preserve the remaining ones, presented himself to me with two left lower teeth standing together and well worn

off, both of which caused him considerable pain. They were the second bicuspid and the first molar, into the surface of which a single upper bicuspid had in the course of time, gnawed itself, and in such a manner that the depression extended equally deep in both. The teeth had long been worn off. The defect existed for many years, until finally pain in the teeth suddenly began. The pain was very intense and purely local, as the patient stated, in the lower worn-off bicuspid. By the way, let it be said that the crown of the upper bicuspid was deeply and sharply marked in the two opposite under teeth, whereas the upper one scarcely appeared to have worn off at all. The affected tooth showed no sensitiveness either at a sudden change of temperature or by scratching with the excavator on the abraided surface, nor by percussion. The pain was uniform and but seldom intermittent. I carefully examined the two adjacent teeth for caries, or if any symptoms of disease were to be discovered, in vain. The cause could only be the wearing off. I then attempted to treat with muriate of zinc, but as this would not act I repeatedly tried nitrate of silver on both teeth. It was all in vain; the patient was suffering intense agony; extraction seemed to me to be the only alternative, at least of the bicuspid, which was supposed to be the sole cause of the pain; and yet I could not resort to this action, as these teeth were the only ones with which mastication could be done, the remaining teeth not striking each other. I commenced to excavate the bicuspid below the flesh, and met, after a short time, with some success, but with so little, however, that on the following day I resolved to kill the nerve through the cavity with the usual nerve paste, which fully succeeded. On the following day the nerve was completely destroyed, and the pain temporarily ceased. By the use of a thin probe strong dentine formation was discovered established within the enclosure of the pulp cavity, toward the abraided surface. Scarcely two days elapsed when the patient again presented himself and complained of having the same pain in the

adjacent molar tooth, which a few days before had its rise in the bicuspid. I made the same manipulations and met with the same success as before. An investigation again discovered new dentine formation. The patient now chews with the saved teeth as formally, and it is to be hoped will do so for a number of years yet.

The most interesting feature in the observation is probably this, that both teeth almost simultaneously showed the same phenomena. The diseased condition is most probably to be abscribed to the excessive stratification of dentine sediment and the resulting pressure on the pulpa.—*Dental Office and Laboratory.*

ARTICLE VII.

Tooth-ache as a Cause of Paralysis.

BY T. H. PARRAMORE, D. D. S., HAMPTON, VA.

That tooth-ache is often caused by morbid conditions of other organs, and *vice versa*, no one who has studied this subject can deny.

Dr. C. A. Harris, in writing of the effect of tooth-ache upon remote parts of the body, says: "To quote the language of Mr. Bell, 'I have seen this occur not only in the face, over the scalp, in the ear, and underneath the lower jaw; but down the neck, over the shoulder, and along the whole length of the arm.'" No writer, however, that I remember having read, mentions paralysis as one of the effects of tooth-ache, and speaks of its cure being effected by the removal of the offending member. I met with a case of this kind a short time ago, and thinking it might be of interest to your readers, determined to report it.

Mrs. M., aged 30, of sanguine temperament and good health, sent for me to extract her teeth. Upon looking into her mouth I found she had lost several teeth, and her mouth was in such a condition as to necessitate the removal of all her upper and several of her lower teeth. My question

elicited the following information with regard to her case: whenever she had tooth-ache she suffered terribly from what she called "cramp" of the right arm and side, stating that her arm was frequently drawn up behind her back further than she could possibly reach by her utmost exertion. This condition would continue for several hours, when this side of her body (from her neck nearly to her hips) would become paralysed, and had at one time continued paralysed for six weeks; but had never failed to be relieved by the extraction of the aching tooth. She has never borne children, but has had several abortions. Her husband is still living. I found the extraction of each of her teeth followed by rigidity of the muscles of her right arm, (described by her as "cramp;") this soon passed off and was followed by a pricking sensation, which she described by saying her arm and hand were "asleep," showing a decided tendency to paralysis of the brachial plexus. In conversation with a physician of over forty years experience in active practice, I mentioned this case, when he informed me that he had met with three similar cases and each had resisted all his efforts to effect a cure until he extracted all decayed teeth and roots, when, in each instance, the paralysis was relieved in a very short time. The pathology of this case puzzles me. I would like to hear from men eminent in our profession upon it. Can we settle it by saying it is reflex action? Can reflex action account for all the conditions? Or could irritation of the trifacial (arising as it does, by two roots, which have been traced into the spinal cord) so effect that organ as to produce paralysis of the cervical and brachial plexuses? These are questions entirely too deep for me. But I am convinced that it is only by close study of such cases as the one described above that we can ever hope to arrive at a correct understanding of the functions of the different parts of the brain and the intricate relations existing between the different nerves, both cranial and spinal.

ARTICLE VIII.

American Academy of Dental Science.

The American Academy of Dental Science, at the monthly meeting held in Boston, December 3rd, 1879, adopted the following resolutions:

It having pleased an all-wise Providence to call from the scene of his earthly labors and usefulness, our esteemed fellow-member, John Clough, M. D., of Woburn, Mass., therefore

Resolved, That the American Academy of Dental Science has heard with deep regret of the decease of our worthy friend and associate, Dr. John Clough, who, as one of the old practitioners of dentistry in Boston, for more than thirty years, faithfully upheld the honor of the profession.

Resolved, That in the death of Dr. Clough, the Academy has sustained the loss of one of its most zealous members, dental science an earnest and intelligent advocate, and the community an excellent and useful citizen.

Resolved, That we accord to his memory this heartfelt tribute of respect, and tender to his surviving family our condolence and sympathy in their heavy bereavment.

Resolved, That a copy of these resolutions, signed by the President, Vice President and Secretary, be presented to the family of the deceased, and a copy be entered upon the records of the Academy and published in the dental journals.

C. P. WILSON,
Cor. Secretary.

EDITORIAL, ETC.

Elsewhere is published an abstract of the bill before Congress for the regulation of the practice of Dentistry in the District of Columbia. As might be expected, quite an outcry is made by those whose supposed interests it trenches upon, and it has been found necessary to furnish to Congress the following brief:

"*An act for the regulation of the practice of dentistry in the District of Columbia, and for the protection of the people of said District.*"

An explanation of the objects of this bill, as contained in its title, and a brief statement of the present condition and circumstances of dentistry in this and some other jurisdictions, will furnish the best reasons and arguments why the bill should pass.

The second object named in the title, being the more important, will be first considered.

It is the protection of the people of the District of Columbia against improper treatment and injury at the hands of persons who pretend to practice dentistry, who are ignorant, and consequently unskillful and incompetent, having never been properly educated in any way in this special calling. It may be said that the people have the option to go to a competent or incompetent dentist, and it is their own fault if they choose the latter. But the people, as a general rule, are not qualified to judge between the two, and it is only after they have suffered irreparable injury at the hands of a dentist (and there are many cases where this has occurred) that they can say that he is unskillful and incompetent. Even Senators themselves are not exceptions to this rule, and one at least of their number can be named who has had this sad experience.

Results like this are inevitable under the present condition and circumstances of dentistry in this and some other parts of the country, where any one can practice this calling who chooses to open an office and put up a sign, even without a particle of instruction or experience.

Justice to the people of this District requires that this state of affairs should not be allowed to continue. In many of the States the Legislatures have enacted laws similar to the present proposed bill, and almost every year others are doing the same. This is a necessity that has arisen from the above-named facts, the progress of the age, and the rapid advance of dentistry to a place among the learned professions.

The other object of the proposed law is a natural consequence of this advance. No one can practice law unless regularly admitted to the bar through a diploma or examination, or both. Congress has, by enactment of a law to that effect, said that no one can practice medicine here without a diploma from a medical college and a license from the medical Society of the District of Columbia. Dentistry, like theology, law, and medicine, has its colleges in various parts of the country, that give thorough instruction in the art and science of dentistry, and confer degrees and grant regular diplomas to those pupils who are qualified to receive them. In these institutions—in its high standard of education and learning, in its many organizations, engaged in scientific as well as practical investigations, and in the known results of these labors, it has all the attributes and requirements of a learned profession.

This fact being established, it is but just and proper that it should be recognized as such by the passage of laws that will place it practically, as to its duties and privileges, on the same footing as the other professions, and thus elevate, utilize, and concentrate the efforts of its best members in the proper treatment of that most important part of the human organism—the mouth and teeth.

As to the operation of the law (if passed) upon those practicing dentistry in the District of Columbia, that can be stated in a few words:

1st. No one can commence the practice of dentistry here after the passage of the act who is not in possession of a diploma as evidence of previous instruction and qualification.

2d. No one *now* engaged in the practice of dentistry in this District will be disturbed until April 1st, 1881. Those thus engaged without a diploma will thereby have the time and opportunity to obtain one from some one of the dental colleges,

all of which have their sessions or terms during the winter, and ending March 1st of each year, or to prepare themselves for the examination prescribed in this act; and even after April 1st, 1881, this law will affect only those who cannot obtain such diploma or pass this examination.

From this class of incapables only can opposition to this measure proceed.

J. B. Ten Eyck,
R. B. Donaldson,
R. Finley Hunt,
T. O. Hills,
H. B. Noble,
J. Curtiss Smithe,
Committee.

Already in Massachusetts, New York, Pennsylvania, Ohio, Michigan, South Carolina, Georgia, and perhaps some other States, laws of similar character have been enacted, and bills are pending before the Maryland, Missouri, and California Legislatures to properly regulate the practice of dentistry and adequately protect not only the public from impostors and incompetents, and protect those who having spent years in the careful acquirement of a proper knowledge of the science and art of dentistry, find themselves injured by those who "pick it up."

H.

The following abstract of the Bill to incorporate the Dental Association of Maryland and the District of Columbia, and to regulate the practice of dentistry in this State, is taken from the Balto. *Sun* of Jan. 23d: Under the provisions of the bill "it shall be unlawful for any person or persons to engage in the practice of dentistry in the State for compensation unless said person or persons shall have received a diploma from the faculty of some dental college, duly incorporated under the laws of this or some other State or foreign government, in which is annually delivered, in good faith, a full course of lectures and instructions in dentistry, and in addition thereto shall have obtained a license from a board of dentists, duly authorized and appointed by this Bill to issue such license. The bill exempts from its provisions those persons now engaged in the practice

of dentistry in this State. It provides that it is the duty of the Dental Association at its next annual meeting to elect a board of examiners, to consist of five members, to be known as the board of dental examiners in the State. They shall be elected for terms of one, two, three, four and five years respectively, and to fill all vacancies successively for a term of five years. The said board shall elect a president and secretary, and shall meet in Baltimore annually by giving thirty days' notice in the newspapers published at Baltimore, Cumberland and Easton. They are empowered to grant a license to any applicant who shall furnish satisfactory evidence of having graduated and received a diploma from any incorporated dental college of good standing, and who shall undergo a satisfactory examination. It is provided that any person who shall, in violation of this bill, practice dentistry in the State of Maryland for a fee or reward, be liable to indictment in the county or city of Baltimore in which the offense is committed, and upon conviction shall be subject to a fine of not less than fifty nor more than two hundred dollars for each offense. Nothing in the bill shall be construed to prevent physicians or surgeons from extracting teeth or prescribing for diseases of the mouth. Within sixty days after the passage of the bill all persons practicing dentistry within the State are required to register in the office of the clerk of the county where located, in a book to be kept for the purpose, giving his name, office and postoffice address, and the date of such registration, and shall be entitled to a certificate of such registration upon payment to the clerk of a fee of fifty cents. All fines collected under the bill are to go one-half to the Dental Association of Maryland and the District of Columbia and the other half to be given to the common school fund in each county where the offense is committed. The board of examiners are authorized to charge $20 for each license issued to those who desire to practice dentistry. The bill is to take effect from the date of its passage."

Dentistry in the District of Columbia.—Senator Vance, of the Senate District committee, United States Congress, has introduced a bill to regulate dentistry in the District and "for the protection of the people of the District." The bill makes it

unlawful for any person to practice dentistry in the District, without a diploma from some dental college, duly and legally incorporated, or a certificate from the Washington Dental Society; but the provisions shall not apply to persons now practicing in the District until April 1st, 1881; but no person shall, after the passage of the act, begin the practice here, except under the act. Any person violating the law is made guilty of a misdemeanor and subject to a fine of not less than $50 nor more than $200, and in default imprisonment from 30 to 90 days. The act does not prohibit physicians and surgeons from extracting teeth. The Washington City Dental Society shall immediately, on the passage of the act, and at its annual meeting in December each year, appoint five members to constitute a board of examiners, and they shall examine all persons desiring to practice dentistry and to those qualified they shall give a certificate to that effect; but a regular diploma shall be *prima facie* evidence of competency. A majority of the board shall be required to make an examination and sign a certificate. The names of the board must be published for two weeks after each appointment of a new board. A fee of $5 shall be charged each applicant for examination, the proceeds to pay the expenses of the act, but the members of the board receive no compensation for their services. The act goes into effect upon its passage.

A Bill, published elsewhere, has been framed for passage by the Maryland Legislature. In both, the latter State and the District of Columbia, are a number of irregular practitioners of dentistry whose course will come under the provisions of the proposed law. H.

Honors to American Physicians.—An interesting ceremony took place at St. John's Hospital, Beirut, Syria, on the 31st of last October, in the presentation of crosses of merit and knighthood in three German princely orders to Drs. Van Dyck, Wortabet, and Post, who constituted the medical staff of the hospital. These crosses came from the king of Prussia and the Dukes of Mecklenburg and Saxony. Dr. Van Dyck was decorated with the Prussian Order of the Crown, Dr. Wortabet with the golden cross of merit of the Order of the Wendish Crown,

and Dr. Post with the Cross of the Knight of the Order of the Dukes of Saxony. Two of the knighted gentlemen are Americans—Drs. Van Dyck and Post. Dr. Geo. E. Post is a son of Dr. Alfred C. Post, of New York, and has already won a reputation throughout Syria and the Levant as an eminent surgeon. Dr. George E. Post is also a graduate of the Baltimore College of Dental Surgery of the Class of 1864.

MONTHLY SUMMARY.

Treatment of Fistulæ and Scars of the Cheek.—On this subject Mr. Edward Bellamy, F. R. C. S., writes that it is, in the first place, all-important to find out exactly the course taken by the fistula or fistulæ—a matter of considerable difficulty sometimes; and the following classification may have its value in diagnosis: 1.—Those opening into the cheek, with a track above the level of the buccal or labial mucous membrane, and which usually discharge saliva only. 2.—Those whose track lies below this level, and which discharge pus and mucco-purulent fluid and no saliva. 3.—A complication of both forms, and which discharge both pus and saliva. With regard to the accurate detection of their course, an ordinary probe frequently gives merely a general idea of the direction, without passing into the offsets. I have always found that a fine filiform bougie, or better still, a fine india-rubber French bougie, is more useful than anything else. After having determined the course, irritating cause, and condition of the fistula, in order to avoid further scar, the dead bone, if there be any, is to be removed by delicate but strong forceps or gouge, and afterward the track should be washed out with a very strong solution of sulphuric acid, which has the effect of completely destroying the fistulous track; or by the introduction of minute crystals of nitrate of silver, until the granulations appear at the orifice, gentle pressure being maintained. A cicatrix, however carefully the treatment be carried out, is sure to remain, unsightly

always and often troublesome, appearing as a "pucker" or adhesion to the underlying bone: and with regard to its treatment, I venture to state, from my own experience, that two methods are open to the surgeon, dependent on the extent or strength of these adhesions. The first consists in introducing a fine blunt-pointed tenotome through the tissue of the cicatrix—laminating it, as it were—taking great care to leave it in free communication with the integument adjacent to it; next, to introduce between the split surfaces a thin strip of sheet-lead, which should be kept in, to prevent the adhesion of the surfaces divided by the tenotome. After a few days, the superficial lamina of the cicatrix may be subjected to gentle movement over the lower lamina, which the patient may conduct himself; this prevents adhesion, and renders the tissue pliant and assimilative. This may be termed the "passive movement" of the cicatrix.—*London Lancet.*

Effects of Arsenic on the Body.—An extensive series of experiments on pigs, rabbits and fowls by C. Gies, published in the *Lancet*, gives some very interesting results. The quantity given was exceedingly minute, being only for rabbits 0.0005 of a gramme, (120th of a grain) and to the pigs and fowls not greatly more; the dose continued for four months. The following changes occurred: The weight increased; the subcutaneous fat was augmented; the bones developed considerably in length and girth, and they presented that peculiarity that *wherever in the normal state spongy tissue exists it was replaced by compact bone.* The bones of the corpus and tarsus were thus converted into *solid bony masses.* Moreover a compact layer of bone was found immediately beneath the epiphysical cartilages of the long bone; a condition identical with animals fed with phosphorous in their food. This change was apparent when the total of doses amounted only to 0.02 of a gramme of arsenic. Other grave changes, viz:—enlargement of the spleen, heart, liver and kidneys were noticed. A very peculiar fact was noticed, that of similar changes in the bones of animals kept in the same cages. This was supposed to be due to the inhalation by them of particles of arsenic with which the air was loaded. [Is this a possible thing? Recalling the minuteness of the dose, and the manner of the alleged poisoning, is it possible for this injurious elimination to occur? It beats Dr. Flagg's frogs.—EDS.] The young of such animals were always still-born, and were marked by the same hypertrophy of spleen and incipient changes in the bones.

England cannot afford a microscopical journal. The one lately published in that country is dead.

Death from a Tooth in the Trachea.—In New York lately, a hospital patient, upon whom an operation affecting the jaw was to be performed, suddenly vomited while a tooth was being extracted. The tooth slipped from the forceps and disappeared. The patient coughed considerably on the next day, and also on the day following, when Dr. Legerts, the house-surgeon, made the diagnosis that the tooth had entered the air-passages, had lodged in the left bronchus, completely obstructing it.

Evidence of pleurisy followed, and subsequently evidence of lung consolidation. The entrance of air into the left lung was completely prevented until abscesses had formed, when air could be heard passing the tooth. No operation was performed for the removal of the foreign body. The case terminated fatally. At autopsy the tooth and abscesses were found as diagnosticated.

Saliva and the Digestion of Starch.—Dr. R. M. Smith, in a lecture on experimental physiology, at the University of Pennsylvania, showed that the gastric juice only suspended the action of saliva in changing starch to sugar, the action being resumed when the acidity is neutralized by the intestinal juices. He showed also that while caustic alkalies destroy the catalytic action of saliva, the weaker alkalies only suspend it. This proves the rationality of giving these alkalies in acidity of the stomach or mouth. It gives a better chance for the digestion of amylaceous foods.—*Med. and Surg. Reporter.*

Relative Success of Different Treatment of Typhoid Fever.—Dr. Samuel Peters, in *N. Y. Medical Record* in summing up the relative success of different methods of treatment of typhoid fever, states that under the old energetic treatment of 1843-64 the mortality was 27 per cent.; while under the antipyretic treatment it is reduced to 15 per cent. A number of authorities are quoted to the effect that under the cold water treatment the mortality was over 20 per cent.; and under customing or food treatment only about 4½ per cent. The best record is from the lime-water and milk treatment, wherein some reports all recovered.

A Question.—The bill of an M. D. was presented, without items. The patient requested to have it itemized; whereupon the doctor thought it strange the party in question could trust his life in his (the doctor's) hands, but could not trust his money matters.

Arsenic in Bismuth.—According to a French authority, Bismuth always contains a proportion of arsenic, and its continued use is therefore pernicious.

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ARTICLE I.

Extirpation of the Dental Pulp, and Root-Filling.

BY L. C. INGERSOLL, KEOKUK, IOWA.

The history of dental science shows a gradual unfolding of the nature and functions of the dental pulp. Fifty years ago it was little known, and little appreciated. Whenever it was exposed so as to be the cause of pain, and when it was known that the death of the pulp would be followed by immediate relief, to devitalize the pulp in all conditions and degrees of exposure was the dictate of the best wisdom and the soundest practice of the times.

But when microscopy revealed the ramifications of the *vital* tissue throughout the hard structure of the teeth, and its cell-workings in the production of dentine, its functions began to be more highly appreciated, and its persistent workings were declared a necessity to the integrity of the tooth structure; and with equal confidence, its extirpation was declared a mockery of science, and a crime against nature.

The progress from nothing-worth to great, and to greatest-worth created such enthusiasm for its preservation as

against extirpation, that therapeutics outran pathology, and arrived at the goal of success with a surprisingly long train of the most doubtful cases reported successfully cured.

According as we understand the structure and functions of the pulp, and the laws that control its workings, and understand the firm and enduring nature of the hard structure which is the product of its workings, will be our treatment of it in all cases when treatment is needed.

If from any mistaken view of the importance of the pulp we have sought to save it alive in the moment of its impending death, it can scarcely be called erring on the right side, if we consider the supervening results. It might be better in certain cases to cast out the Jonah of a living pulp to save in best condition what remains.

A few years ago in my study of the formative organ of tooth tissue, I arrived at the conclusion that the dental pulp is variable in its functions, and wholly peculiar in its workings; and that the hard structure which it builds, usually regarded peculiar, *is* peculiar in a more important sense than is usually considered. I came to the conclusion that the pulp is not at all periods in the life of an individual of equal importance as related to the other tooth tissues, and that the argument for the preservation of the pulp, based on its necessity as an organ of nutrition, is only applicable to the earlier periods of life, and that if it ever has a nutritive function as regards the hard tissue, it wholly ceases in after-life throughout the larger area of the tooth structure—that the generally received opinion that the hard tissue of the teeth is amenable to the law of waste and replacement of its elements is based wholly on analogy, and is without other foundation. On the other hand I consider the fact that it is not subject to the general law of organic structures in regard to waste and nutrition constitutes the *chief peculiarity* of fully formed dentine.

I therefore came to the conclusion that the loss of the pulp is not, in all cases, so damaging as the profession are wont to believe; and that there are numerous cases in

which it is far better for the permanency of the remaining tooth structure to extirpate the pulp at once than to attempt by long-continued doubtful means to save it alive.

I shall, therefore, *assume*, in the presentation of this paper, that there are cases where extirpation is indicated, and it will be my purpose to point out the best method, then to explain my method of filling the more difficult class of root canals thus made vacant.

Extirpation of the pulp, the first branch of my subject, has not, I am confident, gained sufficiently the attention of the dental profession. The reason may possibly be found in the disfavor with which the profession have regarded the operation. Those who have occasionally found in their practice cases which, in their view, demanded extirpation, have been cautious of mentioning the fact, lest they should be thought not to have caught the spirit of the age, and to be so far behind the progressionists that they might lose caste with the more advanced of the profession. Hence that improvement which may be found in a comparison of ideas and modes of practice has not been apparent as regards this subject. Since the high-sounding notes, peal upon peal, of progress in the direction of pulp preservation have been rung in all true professional ears, this subject has seemed to many scarcely worthy of attention. The result is that old ways and methods, which were bad ways and methods, have been practiced in comparative secrecy, greatly to the detriment of dental practice, and damaging to those who have been the subjects.

When a devitalization of the pulp was a more acceptable practice than it has been in later years, the term *devitalization* seemed comprehensive of nearly, or quite, the whole operation; and all discussion of methods began, progressed and ended with the *agents* employed and the *time* occupied to effect devitalization.

We have listened long to the discussion of How little or how much arsenic is needed? How little or how much time is required for its action? How to render the pulp

insensible to its irritating and painful effects? and to a comparison of the virtues of cobalt and arsenic; and in all the discussions the *method of devitalization* was the question of chief concern.

It is quite surprising to us now that so many teeth were so kindly cared for by nature after devitalization to protect them from the usual result of alveolar abscess. While the profession of to-day are far more enlightened concerning the ætiology and pathology of dental diseases and the requirements in any case, the old term *devitalization* is still much in use, and should be abandoned as too suggestive of the very inadequate methods and false ideas of former times, with respect to a very important and difficult operation in dental surgery.

The word which I have employed as the title of this branch of my subject gives us the full rounded idea of what is to be accomplished, viz: *extirpation;* which means to root out, to eradicate, to wholly get rid of, to expel.

With this idea in mind, the work of the dentist is scarcely begun when devitalization of the pulp is accomplished; for he is required to remove every vestige of the tissue from the pulp chamber and from the root canals. Devitalization is a simple process, which few, if any, have difficulty in effecting, except in a few morbid cases. But extirpation is quite another operation, and in many of the teeth is attended with very great difficulty; so great, that it is undoubtedly true that the number of operators who accomplish it with certainty in the molar teeth, and in many of the bicuspids, is very small. Yet, with our present knowledge of the requirements of the case, successful treatment depends upon the *thoroughness* of the extirpation of the pulp. It is not the place for guess work and blind uncertainty; for safety depends on the certainty and completeness of the removal of the pulp tissue. How shall this be accomplished?

The general practice of the profession is sufficient warrant for the use of arsenious acid in the first step in the process, viz: devitalization. But all should be aware that this is

an all-powerful agent, and should be used with the utmost caution to prevent contact with other vital tissues than the pulp. I think nothing in the history of its use can indicate the exact quantity required to effect devitalization of a living pulp. But we do know this, that a quantity very minute has, in multitudes of cases, accomplished the purpose.

When the arsenic is applied the cavity should be carefully sealed up, so as to prevent any possible escape and action upon surrounding tissues. As a cover, I use a thick solution of gum sandarach or gum shellac on a bit of cotton. From six to twenty-four hours is sufficient time in most cases to effect devitalization—the length of time depending on the extent of the exposure and the completeness of the contact of the paste with the pulp tissue. If the cavity of decay is in the posterior wall of a molar near the gum, rather than run the risk, which is very great, of damaging the root membrane by applying the arsenic in such a locality, I seal up the cavity with gum shellac and drill a new opening through the grinding face of the tooth. Too much caution cannot be used in preserving from injury the peridentium and the parietes of the alveolus, on which the future life and usefulness of the tooth must depend.

After devitalization, the next step is to secure direct and easy access to the root canals. Neglect in this particular is always unwise. In the anterior teeth it is best, in a large number of cases, to drill in through the plantine bevel of the crown. If the decay is in the grinding surface of a molar, the opening should be enlarged with a corundum point in the engine, or by other means, to such size as will permit a full view of the entrance to the root canals. In case the cavity of decay opens posteriorly in a molar, the engine should be used to cut through the posterior angle of the crown and far enough anteriorly across the grinding surface (certainly as far as the centre,) for the special purpose of getting an entrance by direct line into the roots. Thus the operator can *see* as well as *feel* his way, and know better the difficulties of his undertaking.

The next step is the removal of the devitalized tissue. In the straight round roots of the anterior teeth, this operation is so common, and attended with so little difficulty after direct access has been gained, that it is not necessary to suggest any special modes of operating in the roots of these teeth. I am well aware that many dentists confine their root operations to this class of teeth, and therefore they never encounter the difficulties which it has been my study to overcome. The molars are the most important teeth in the mouth, and due consideration of their importance demands that especial attention be given to their preservation.

Let us surround our case with difficulties—a case taken from among the worst. Suppose it to be a second superior molar in the mouth of a patient twenty-five years of age, with firm and healthy dental organization, the cavity opening posteriorly and near the gum; the third molar in position. This case presents a complication of difficulties.

In a case with such surroundings, it may be necessary, in gaining direct access to the pulp chamber, to cut across the crown, beyond the central sulcus, even to the anterior angle.

Bearing in mind now that the operation contemplated is a complete and thorough removal of the contents of the pulp chamber and of the three roots, I crave your attention while you follow me step by step.

It is difficult to empty the pulp chamber and the palatine tooth of their contents; we will pass therefore to the buccal roots. It is quite impossible with ordinary instruments to enter these roots, except for a very short distance. In very rare instances, and in the mouths of young persons, the posterior buccal root may be entered far enough to lay hold of, and remove bodily, the entire nerve tissue. But this is so rare that it need not be anticipated at all in the mouth of an adult. The anterior buccal root is *still more* difficult of entrance, and to operate successfully in this root is to be in possession of sufficient skill to ensure a satisfactory operation for entire pulp removal.

I have found the barbed nerve broaches wholly impracticable for removing the tissue from the extreme portions of the root, the barbs acting as a hindrance rather than a help. The drills manufactured for the purpose of enlarging the root canals are so large or so wanting in flexibility as to cut through into the alveolus of a very flat root, or so badly tempered as to be quite certain to break off in the root. In this complication of difficulties, some have resorted to chemical agents to put the fragments of nerve tissue remaining in the root in solution. Pepsin, potash, and soda have been resorted to, but with very unsatisfactory results.

After removing the arsenical paste, my practice is to wash the cavity with dialyzed iron, for the purpose of neutralizing the effect of any remaining portions of arsenic, which, being otherwise washed out, might come in contact with the root membrane at the neck of the tooth, and be a source of great danger to the future health of the tooth. The dialyzed iron unites chemically with the arsenic and renders it harmless. To preserve the root membrane from harm should be a matter of as much concern as the complete extirpation of the pulp.

After application of the iron, I remove the soft tissue from the pulp chamber and all from the roots that can be readily reached. I then dismiss my patient, without applying creosote or other anti-septic which might prevent decomposition, leaving only loose dry cotton in the cavity. It must be remembered that after devitalization there will be a sloughing and decomposition of all remaining fragments left in contact with the vital portion at the apex of the root; and a healing of the living portion at the point of sloughing off of the dead. These processes require time, and the briefest time possible is the best. To secure this rapid sloughing and decomposition, I instruct my patient to replace in the cavity twice a day fresh cotton, washing out also with warm water at each removal of the cotton. This treatment should last from three or four days to a week. Then I give myself ample time to explore the roots. But

it seems to me vain to direct one to do this without describing the instruments with which it is to be done. The profession have had too much advice as to *what ought* to be done, without making apparent any possible *method of doing* what is most instructively advised.

Any one who has attempted to remove wholly and thoroughly all the soft tissue from the flattened and bent roots of the superior molars knows how inadequate are most of the instruments at hand for accomplishing it. The difficulties are *so* great that many a conscientious operator gives up in despair, hoping that kind Nature will relieve him from the mortification of witnessing future unfavorable results.

For nerve and root instruments generally, I purchase jeweler's broaches. These are cheap, and with a little ingenuity can be made to serve every needed purpose. They are hexagonal in form, and from the size of a hair to any larger size that may be required. They are too hard and brittle for safe use without drawing the temper. To do this without injuring the quality of the steel is a very careful operation. Before heating, the instrument should be coated with soap or glutinous oil, to protect it from rapid oxidation while heating.

Where one has a hot stove in the room—not red-hot—a stiff spring temper may be obtained by placing delicate hair broaches on top of the stove, then very soon grasping them with the tweezers and lifting them up *very slowly* through the hot air to the cool air above. Boiling in tallow will also give an excellent spring temper. To reduce the temper to perfect softness, and render the instrument very flexible and tough, do not thrust it into the flame of a spirit-lamp. You are quite certain to fail in what you attempt in this way, and quite as certain to spoil the steel.

A better method is to coat the instruments, as before directed, then take a shovel full of glowing embers from the stove, and thrust the instruments well into the embers, to remain there until cold. For the formation of a hook on

the point of a delicate instrument, I take a spring-tempered broach, warm it, and rub it on a bar of soap, or, to avoid the danger of over-heating, moisten the soap and rub it on the instrument; then heat an old bench file or small bar of iron to a red heat, and lay the end of the broach on it, to remain till the iron bar has cooled.

To bend the hook, bevel off the handle of a separating file, not quite to a cutting edge, place the broach against the flat side of the fire handle, and, holding it there firmly with pliers, bend the point of the broach down against the bevel.

A flat instrument is needed. This I make by filing into the flat form a spring-tempered broach of such a size as I deem suitable; it may be very thin, while its width will give the requisite stiffness, and it will enter most of the flattened roots. With these instruments I begin my work of emptying the root canals.

First, take a straight hair-like spring-tempered broach and pass it up to the apex, rotating if necessary to enlarge it, to learn if there remains yet any living portion of the nerve tissue, remembering that all sensation of pain is not evidence of vital tissue in the root canal. If the devitalized tissue has not yet sloughed, touching it with the instrument will cause pain at the moment of contact, which will cease when the instrument is withdrawn. If a living portion of nerve tissue remains in the canal, the pain will be likely to continue. But I do not deem it advisable again to apply the arsenious acid. I ream out the passage into the root with small, then larger broaches, until a small hooked broach will enter; then I employ a local anæsthetic, compounded of equal parts of chloroform, tincture of aconite-root and alcohol, to obtund sensibility of the tissue, when it can in most cases be removed without serious pain. If I cannot lay hold of it with the hook and remove it wholly at once, I, with the same or another instrument, break up the tissue and thus destroy its vitality; and after removing such fragments as I can, I leave the remaining particles for several

days to decompose, cleansing the cavity from time to time with water and wiping out with fresh cotton. This operation must not be hastened. Time is needed to secure a total solution of dead tissue. When the tissue is broken up mechanically we can never be *sure* of removing all by simple mechanical means. Hence, I insist most strenuously on giving time for chemical decomposition as the only certain mode of wholly ridding the pulp chamber of every vestige of organic substance. The certainty of success depends upon this *thoroughness.*

Let us now consider the operation of filling. Any root that will permit the passage of a broach of any size through the canal to the apex is in condition to fill, needing only to enlarge the entrance to the root, so as not to consume too much time in repeated efforts to find it. The broach should pass readily in and out.

The difficulty of the extirpation of the pulp is only second to the difficulty of filling the roots in the molar teeth. All agree that certainty of success can only be gained by filling the root canals thoroughly with some impervious and insoluble material; and the absolute necessity in the case is that the canal shall be thoroughly closed at the apex. It is not ordinarily difficult to fill that half nearest the pulp chamber. But this is of comparatively little importance when the apical end of the canal is thoroughly filled. It is therefore evident that any method of filling which does not with certainty reach the apex is defective, and that which offers the fairest certainty of doing this is the best.

Will the filling materials in general use, with the *method* of using them, accomplish the purpose in the class of roots we are now considering?

While gold and tin may be successfully manipulated in the round straight roots and in some of the bicuspids, I consider it an impossibility to fill with these metals the flattened and curved roots of the molars.

Oxy chloride has been very favorably considered as a filling material for roots of all classes. This, too, may serve

well enough in roots which can be readily entered and rapidly filled. But to have it of such consistency as to render it, when hardened, insoluble and impervious; it hardens too quickly for an operation where time is one of the elements of success, and besides it has such an affinity for the tooth bone that the canal is liable to be clogged a short distance from the entrance before the more remote portion of the canal is filled.

A solution of gutta-percha in chloroform has been used with undoubted success in many cases. I consider it objectionable in two very important particulars. By its tenacious consistency it will stretch across the mouth of the canal, and the enclosed air will prevent its entrance into the roots. I do not consider experiments with it in filling roots of teeth out of the mouth reliable tests of its adaptability. In such cases the apical foramen is open to permit the confined air to escape and give place to the chloroform solution. If an effort be made to expel it by force, the rapid evaporation of the chloroform leaves you a stiff, sticky material to manipulate, which is speedily beyond the operator's control. There is also the same difficulty in expelling the air when oxy-chloride is used. *Any* fluid holding in solution solid material of any kind, and of such consistency as to form an impervious filling, will stretch itself across the narrow openings to molar roots and prevent the escape of confined air, and consequently the entrance of the fluid into the roots. Here let me say, that of impermeable materials I consider that it matters not what is used. The only question in relation to each regards the practicability of its use in making the operation of root filling a certainty in the difficult class of roots we are now considering.

I have but one other preparation to name, and that is an alcoholic solution of such gums as shellac, mastic, or copal. This solution is not new for the purpose of root filling. But the *ordinary method of using it* is open to the same objection as that already made against oxy-chloride and the

gutta-percha solution. My early experience with it was attended with the same unsatisfactory results as with other materials. My method of manipulating the gum for a few years past has brought me to the most satisfactory results that I have ever obtained in filling molar roots.

Having gained visual as well as mechanical access to the root in the manner already described, I prepare my gum in a creamy consistency, adding a small quantity of that strong antiseptic, salicylic acid, which readily dissolves in alcohol.

I select a broach of suitable size to pass to the end of the root freely, it matters not how small, and clipping off the sharp end and rendering it smooth, I dip it into the solution and pass it carefully up the root to the end. This I do again and again. Every time the instrument passes up, it expels a portion of contained air, and leaves also a portion of gum which was adhering to it. However minute that portion of gum may be, each successive plunge of the instrument adds to it, expelling at the same time the air to give place to it. A pool of the gum solution may be formed in the pulp chamber, not with the anticipation that capillary attraction or gravity will cary it to the terminal end of the canal in spite of the law of pneumatics, or that a little agitation with a cotton swab will do it. But having a pool of solution through which the instrument passes in and out with a portion of the gum adhering to it, the rapid churning process must at length expel all the air and fill with gum to completion the entire length of the root.

Do not be afraid of wasting time in this operation. It is time and patience that conquers. Up to this point the rubber dam must be in place to keep the cavity dry. When you feel quite certain that the gum has filled the root, add a drop of water to the cavity. The alcohol, having a greater affinity for the water than for the gum, will leave the gum a firm deposit in the root canal and unite with the water. This process takes a little time also. You will recognize the firm deposit by the increasing difficulty in passing the broach into the canal. Wipe the cavity as dry

as possible with bibulous paper, and give a little time for evaporation; then, when dry, repeat the operation with the gum, and wiping out all the superfluous gum, leave the cavity for a short time for the evaporation of the alcohol. In the meantime the filling material may be prepared in case it should be advisable to fill at the same sitting. If no unfavorable conditions of the peridental membrane have attended the previous treatment, I have found no unfavorable symptoms following an immediate filling. If unfavorable indications have attended the operation, I deem it wise to dismiss my patient for a few days or a week, then treat the cavity with a solution of salicylic acid in alcohol before filling.

I am constrained to say, *do not hurry.* It is better to wait for two weeks after the tooth is considered ready for filling, than to hurry the whole operation through in a few days. Success is born of *thorough manipulation* and *time.* —*Transactions of Ill. State Dent. Society.*

ARTICLE II.

Reaction of Oral Fluids.

BY J. L. ASAY, M. D.

Chemistry, in its entirety, is a science, in which no deviation from principles is possible; the laws which govern it are positive. We may divide it into medical, dental or any other branch as we choose, but no line of demarcation exists to distinguish one from the other, since its laws are universal and fixed.

It is therefore assumed that dental chemistry, so far as its name implies, is merely an imaginary division for special study, and relates to chemical changes, occurring in oral cavity, and the effect of inorganic substances when brought into contact with organic substances, together with the chemical nature of materials employed in dental science.

As a dessertation upon the whole branch of dental chemistry would consume much time, would be equally laborious,

and lead us through interminable labyrinths, we are obliged to content ourselves, on this occasion, with certain subjects, as a precursor to its more intimate relations which may from time to time appear, ever trusting that as the discoveries of to-day are but the finger-posts that point to the triumph of the morrow, so may we be induced to patiently study the complex and varied changes occuring in the mouth that we may practice our profession intelligently and successfully.

The first of these subjects, therefore, which attracts our attention is reaction of oral fluids. It will be remembered that three distinct pairs of glands, empty their secretions into the mouth, besides numerous follicular glands lodged in and beneath the buccal mucus-membrane.

From experiments of Magendie, Bernard and others, it is demonstrated that the fluids of the parotid and sublingual glands are clear and watery, and contain but a small proportion of solid matter, whilst that of the submaxillary is thick and visced, and contains a larger proportion of solid matter.

With the influence of the respective salivary glands on digestion, and the important part they play upon food when taken into the mouth, to be afterwards submitted to the stomach, we have no present interest, but certain it is, that they act in different degrees of efficacy for that purpose.

The secretions from these sources are often varied in quantity, under certain influences, being augmented by the action of the masticatory muscles, the odor of savory food after a long fast, and other exciting causes; diminished by fear and exalted temperature of the body.

What is considered the normal characteristics of saliva, is a question, to many minds, of perplexity, yet it has in a measure, been conceded to depend upon the nationality, habits and pursuits of the individual, and that saliva is normal, in which acidity and alkalinity in the mouth are so neutralized by contact with each other in such proportions as to leave alkalinity in excess.

A sweeping assertion has been made, and often reiterated, that the characteristic reaction of saliva is alkaline. To this we agree, so far as an admixture of the fluids is concerned, yet is far from truth as regards the identity of each distinct secretion, besides many modifications may and frequently do occur, for instance, saliva changes its chemical proportions, after a full meal, when it is alkaline, to the end of a long fast when having passed from the alkaline condition to neutrality, becomes decidedly acid in its reaction, and how shall we determine that the one condition for the time-being is not equally as normal as the other.

Again, we find from observation that in subjects of robust, healthy and hearty eaters of wholesome food the mixed fluids of the mouth are always alkaline, but in those of effeminate stature, with nervous temperaments and sedentary habits, they are either neutral or acid.

We therefore assume that an alkaline reaction is not universal in health, even when the litmus is placed directly under the tongue, which is the most favorable position for the test. But may not the secretions be acid in one part of the mouth and alkaline in the other? Experiments have shown that where the test has been applied under the tongue in an admixture of saliva, showing an alkaline result, yet applying the litmus to the free margin of the gums, or in a deep sulcus of the mouth, previously rendered perfectly devoid of food or other extraneous matter, we secure a decided acid reaction.

So far as our observations have been made, we are led to believe that this acid condition is produced by the agency of the buccal mucus containing a peculiar principal called ptyalin albuminous in character, and in such condition as to be capable of producing fermentation. Neither pair of salivary glands, according to the researches of Cl. Bernard, can by themselves effect the change, "but an admixture is necessary for the generation of this peculiar ferment."

Saliva is liable to a departure from its normal standard through such a cause, as in fever, or other acute affections

of the system where the degree of temperature of all the organs is raised, thus affording increased facilities by the influence of heat and moisture for the process of fermentation, and it is in such cases that an alkaline wash for the mouth is particularly grateful to the patient, and serves as a preventive to those morbid changes which attack the teeth and appendages during such a condition of exaltation.

Acids are generated in the oral cavity from food and condiments taken into it. More especially is this the case in uncleanly mouths. In such instances as where portions of the food are allowed to be retained about the teeth and in their interstices, we have by the simple process of fermentation the generation of acetic acid, and as decomposition advances, it will frequently be observed that upon removing extraneous matter from beneath the teeth or other receptacle, the familiar odor of sulphretted hydrogen is present, and such conditions will remain so long as the exciting cause is permitted to exist.

Other acids found in the mouth are lactic, citric, malic, frequently the mineral acids. The presence of these vegetable acids is attributed to their being set free during the mastication of the fruits containing them. Lactic acid exists in the mouths of those afflicted with gout, rheumatism, malarial affections and gastric complications. Mineral acids, though no doubt frequently generated in the mouth, yet chiefly owe their presence to their administration as medicines, and when we remember that the nitro-muriatic is a tonic of par-excellence in many cases, and is habitually used as such, and that hydrochloric, in the form of tinct. chloride of iron, is the sheet anchor in diptheritic affections, we need not be surprised at the ravages of tooth structure as the result of these acids.

But as I have before stated, they may be generated in the mouth. For instance, nitric acid may be formed from the nitrogenous food remaining in the mouth and concealed in recesses, the food giving up its nitrogen, which, uniting with hydrogen in the necessary equivalents to form am-

monia, which, in its turn, becoming decomposed, and an oxide of nitrogen formed, of course nitric acid will be the result.

In organic structures, sulphur is always united with albumen, and the same causes that produce sulphuretted hydrogen in the mouth will assist in forming sulphuric acid.

Hydrochloric acid is contained in the gastric fluids, but the quantity that would be found in the mouth from this source as by eructation, is so trifling that its consideration will not at present be attempted; besides the salivary glands, either by their secretory or excretory functions frequently furnish it, but its presence is oftener due to the union of hydrogen with chlorine, the latter being liberated from the chlorides dissolved in the mouth or from the continued use of saline diet. Again, its presence may be due in consequence of galvanic action caused by the insertion of different metals in teeth of the same mouth. More particularly should such fillings be of gold and others of amalgam. Mucus and saliva contain the chlorides of sodium and potassium, and these being resolved into their elementary principles by galvanic action thus establised, the chlorine unites with the hydrogen, and hydrochloric acid is the consequence.

In regard to formation of acids by fermentation and habits of negligence, the old adage that "cleanliness is next to godliness," is in such cases particularly applicable, and should be deeply impressed upon the minds of those entrusting themselves to our care. The mouth needs washing as much as the face and other parts of the body. Teeth of good structure, if kept clean, seldom have their continuity impaired, otherwise we always have disintegration of tooth structure, the deprivation of its earthy constituents, and eventually of its irreparable loss.

All acids found in the mouth when predominating, although in their weakest condition, will dissolve the lime salts, and this degree of decalcification is in proportion to the density of structure attacked, and is exhibited in the

greatest measure where chalkiness of the tooth is in excess from such causes as inheritance or impoverished condition of vital forces.

Acids to disintegrate tooth structure must be constant in their application. When acid first attacks a base, a salt is formed, which is no longer acid nor alkaline, but neutral in its character, and this salt must be removed, as it necessarily is, by being taken up and held in solution by the fluids of the mouth, and a new quantity of acid brought into contact with the exposed structure to continue the process of decalcification. In other words, there must be a continuous circulation of fresh acid, otherwise the process of chemical destruction is retarded and at length entirely checked. Therefore, decalcification is in exact ratio to the amount of chemical force applied.—*Trans. Cal. State Dental Asso.—Rep. Com. on Chemistry.*

ARTICLE III.

The Therapeutical Action of Cold.

BY W. H. THOMSON, M. D.

Professor of Therapeutics and Materia Medica in the Medical Department of the University of the City of New York.

Gentlemen:—Remedial agents are of two kinds: First, drugs; and second, other therapeutic measures, such as temperature, electricity, etc. For the sake of convenience, we will here consider those remedial agents which are not drugs, and first, among them, we will study one of the physical forces or imponderables—cold.

Physically, cold is the absence of heat. Therapeutically, it is a positive agent, and has five actions:

1. Tonic.
2. Styptic.
3. Antiphlogistic.
4. Anæsthetic.
5. Antipyretic.

In the first three, cold acts only upon the vaso-motor system as pure irritant neurotic. In the last two it acts simply on physical principles.

COLD AS A TONIC.

We have said that cold, when it acts as a tonic, is an irritant Every irritant produces a shock and causes an expenditure of the energy of the part irritated. The energy of the part irritated, therefore, becomes depressed; but this depression differs from that produced by a simple sedative, in that it is followed—provided the shock is not so great as to cause exhaustion—by a *reaction* to or beyond the condition in which the part was prior to the irritation. Thus, cold, as an irritant, affects the vaso-motor system and produces a shock which is followed by a reaction. In other words, this system is exercised, and all moderate exercise tends to strengthen the organ called into action, and permanently to improve its nutrition. Cold, then, is a vascular tonic, and may be used generally or locally. When the circulation is feeble, and there is loss of muscular power, the general use of cold will arouse the heart, restore arterial tone, and thereby improve the nutrition of the whole body. For this purpose either the dip, shower, or sponge-bath may be used, according to the strength of the patient, taking care never to cause exhaustion by its too frequent or too protracted use. A thorough reaction, as indicated by a glow of the skin, should always follow the bath, and never a sensation of lassitude or fatigue. When the irritant effect produced by the cold water alone is not sufficient, salt or some mild rubefacient may be added. If the patient is too feeble to bear even the sponge-bath, simple exposure of the surface of the body to cold air will often prove beneficial. In all cases reaction may be assisted by friction with a rough towel.

A cold douche to the nape of the neck is indicated in the following conditions:

1. When, after sunsrtoke, the arteries of the head remain dilated, and there is headache and dizziness on exertion or exposure to the sun.

2. In all cases in which headache is confined to one side, and is attended by dilation of one temporal artery and suffusion of one eye.

3. In false croup, or the crowning respiration of children.

4. In tinnitus aurium, when the throbbing is synchronous with the beating of the heart, and the tympanic arteries are distended, the cold douche to the nape of the neck, aided by the internal use of hydrobromic acid, may afford relief.

Sponging the chest of a phthisical patient with cold water lessens the susceptibility to cold.

Local applications of cold water are useful in promoting absorption of inflammatory effusions and exudations in the subacute and cronic stages; also in restoring the balance of the circulation in the liver and spleen when enlarged in malarial poisoning.

The hip or sitz-bath is useful in hemorrhoids, prolapse of the rectum, and congestion of the pelvic viscera.

COLD AS A STYPTIC.

As a styptic, cold acts by constringing the arteries through its influence on the vaso-motor nerves. It is preferable to astringent drugs or other hæmostatics, because it obviates the necessity of applying irritant substances to the bleeding part. Nor need the cold always be applied directly to the seat of the hemorrhage; for it will also affect distant parts in accordance with the laws of the vaso-motor system, the most important of which are the following:

First.—An impression on the afferent nerves of a given part will cause a variation in the calibre of the arteries of that part.

Second.—An impression on the afferent nerves of a given part will cause a variation in the arteries of all organs situated directly beneath that part.

Third.—In the case of organs which are in pairs and perfectly symmetrical, as the eyes, ears, hands, and feet (the lungs, kidneys, and testicles are not,) variations in the calibre of the arteries of one will cause a similar variation in the other.

Fourth.—Variations in the calibre of the arteries of certain parts are accompanied by corresponding changes in the arteries of certain other parts, and these particular associations are to be determined by experiment: for example, the relation between the circulation of the feet and that of the pelvic viscera and the pharynx, and the relation of the circulation at the nape of the neck to that of the head and face.

The following instances will suffice to illustrate the application of these laws in the use of cold:

1. Cold water applied directly to a bleeding surface.
2. Ice-bags to the epigastrium to check hæmatemesis.
3. Holding any cold body in one hand to arrest hemorrhage in the other.
4. Cold foot-baths to arrest metrorrhagia.

In post-partum hemorrhage the best means of applying cold is by ether spray, for the sudden and intense impression produced causes effectual contraction of the uterus without chilling the patient. If ether spray is not available, cold water should be poured upon the abdomen from a height of two or three feet, the shock of the falling water materially assisting the action of the cold. Either of the above measures may be used for hæmoptysis.

COLD AS AN ANTIPHLOGISTIC.

As an antiphlogistic, cold may be used to arrest an acute inflammation, unless suppuration has occurred, or to prevent inflammation when threatened. This it does by causing a protracted constriction of the arteries, thereby preventing the active congestion essential to all acute inflammation. It should be invariably applied as dry cold, directly to the part affected, in sufficient intensity to relieve pain, and continued so long as the exciting cause exists. If, before the tendency to inflammation has entirely disappeared, a neuralgic pain occurs, it is a sign that the vaso-motor nerves have become exhausted, and the use of cold must at once be discontinued, or gangrene will result; moreover, the patient will feel more comfortable without than with the

cold applications. This neuralgic pain is continuous, and, if the injured part be one of the extremities, it extends from the part injured toward the trunk. Inflammatory pain, on the other hand, is local throbbing, accompanied by local heat, and is relieved by more thorough applications of cold. In fractures, or other severe injuries near joints, the injured parts should be surrounded with pounded ice placed in pigs' bladders or rubber bags, two or three layers of perfectly dry muslin being placed between the skin and bags, lest the parts be chilled too suddenly. A bottle filled with ice-water makes a good antiphlogistic splint for injuries of the hand. Inflammation of the eyes may be controlled, and its spread from one eye to the other prevented, by means of cold applications. Ice-bags should be applied to the head and spine in epidemic cerebro-spinal meningitis. Cold applications will control the spread of erysipelas, and are the best means for relieving febrile headache. Headache from uterine trouble is best relieved by moist warmth. Cold should not be used antiphlogistically in any acute inflammation of internal organs except peritonitis with vomiting, and meningitis.

COLD AS AN ANÆSTHETIC.

The use of cold as an anæsthetic depends upon its physical property of freezing tissue and deadening sensation without injuring vitality. It is most useful in operations where no great thickness of tissue is involved, as in opening abscesses, amputation of fingers, Cæsarean section, and ovariotomy. In all cases the action of the cold should be secured as rapidly as possible. Apply ether spray to the part alone which is to be operated upon. Anæsthesia is complete as soon as the skin becomes white and glistening.

COLD AS AN ANTIPYRETIC.

When the abnormal elevation of the bodily temperature is due to insufficient radiation of heat, as in some nervous disorders, it is not generally in itself dangerous; for it has been known to reach 123° F., and remain there for several weeks. But if, as in fevers, the rise of temperature depends

upon excessive chemical changes, then the heat itself is injurious, causing arrest of gland-secretion, as well as extensive destruction of tissue. In every fever there is a certain point beyond which, if the temperature rises, certain structural changes will take place. The glands become affected with cloudy swelling, and fatty degeneration ensues, and the muscles affected in the same manner become remarkably brittle.

The point at which these changes occur differs in each fever. In scarlet fever it is 105° F.; in typhoid fever 106° F.; in relapsing fever from 107° to 108° F.; and in erysipelas still higher. Beyond this dangerous point in each fever the temperature should not be allowed to rise, but must be lowered by the use of cold, the result of which is simply the abstraction of heat. This may be effected by immersion in a cold bath or by the cold pack. Place the patient in a bath at 75° F., and gradually cool the water down to 65° or 60° F.—never lower, and at the same time use cold effusions to the head continuously. At first the temperature will rise slightly, owing to the blood being driven from the surface of the body into the viscera, which are always a little warmer than the skin; but the bath should be continued until the temperature is reduced to 100° F., provided the fall is gradual—that is, one degree in six, five, four, or three minutes. If it falls one degree in two and a half minutes, stop the bath when the temperature has reached 101° F.; for in most cases a further reduction of one degree will occur after the bath is discontinued. If the fall in temperature during the bath be one degree in *two* minutes, the patient should be taken out at once, whatever the actual temperature may be; for in such cases there is danger of the subsequent fall becoming uncontrollable, reaching perhaps 97° F., and the patient passing into collapse. Should this at any time occur, wrap the patient in hot blankets, apply hot saucers to the epigastrium, and give brandy or other stimulants.

When, for any reason the bath is impracticable, the cold

pack may be used, always, however, with the same precautions as in the use of the cold bath. First wrap the patient in a sheet wrung out of water at an ordinary temperature, say 70° F., and then lay on other sheets wrung out of ice-water. The cold bath or pack should be repeated often enough to keep the temperature below the point of danger for that particular disease. If necessary, use one every hour. If, however, two or three a day are sufficient, one should be so timed as to be given just before the highest rise of the fever-heat—that is, usually between two and three o'clock in the afternoon.

The contra-indications to the antipyretic use of cold are hemorrhage from the bowels and notable variations of temperature from the regular course. Bronchitis and pneumonia are not necessarily contra-indications.—*Med. Record.*

ARTICLE IV.

An Odontome.

BY G. V. BLACK.

I have here an erotic formation, to which I wish to call the attention of the members of this Society for a few moments only. It is an Odontome, Odontomata or tooth tumor, or a tooth the formation of which is so faulty that it has not the appearance of a tooth. This specimen occurred in the practice of Dr. E. Duncan, of Jacksonville. The patient a man about twenty-five years old. It occupied the position of the second molar in the upper jay, and had never given any serious trouble; but in the last few months had become loosened, and at last dropped out without any scientific aid whatever. Dr. Duncan had examined it a short time before this, while the Odontome was in position, and again examined the mouth a few days after it had dropped out, and found the wisdom tooth, which had been missing, making its appearance in the socket left by the Odontome. It is evident that the wisdom tooth had been

detained by being beneath the Odontome. The other wisdom teeth were all in their places, as were all the other teeth; they were well formed and free from decay. The health of the patient, and that of his family, had been good, and the teeth of all well formed.

When dry, the weight of the Odontome was 4.77 grains.

Measuring according to the situation in the mouth, it measures

24	millimeters	from before backward,
20	"	from side to side,
14	"	from root to crown.

The upper or crown surface is oval, presenting no sharp angles, but is somewhat irregular in form; yet showing no appearance of normal cusps. From before backwards it is nearly flat from side to side; portions are quite smooth and covered with enamel, other portions rough and apparently without enamel. This upper surface or crown portion overhangs the lower or root portion a little all round the margin, and in most parts presents the appearance of an irregular junction of enamel with dentine.

The lower or root portion is generally flat, though quite irregular, presenting a number of depressions and elevations—notably one large depression in the centre of the long diameter and the posterior half of the short diameter, which, from its form, would seem to have been moulded upon a prominent cusp of the coming wisdom tooth, upon which it seemed to have fitted. Around this depression there were irregular protuberances, from two to four millimeters in height. The anterior third of this surface slopes up to the junction of the enamel, while the remaining portions, although quite irregular, rise pretty squarely to the junction with the enamel.

For the purpose of examining its structure, I have sawed it through, halving it in an antero-posterior perpendicular direction, and cut some sections. I found all the tissues of a normally developed tooth, but in a state of confusion. There is entire absence of any proper pulp cavity.

The disposition or arrangement of the tissues is very peculiar and striking. It is as though there were a thousand little teeth, exceedingly minute, growing as close together as they could be crowded, and the interstices between them filled up with enamel and cement. In the field of the microscope, with the sections I have, we will often be able to see a number of these diminutive teeth at a single view; each has its own little pulp chamber in due form, its own separate dentine, and its own enamel cap, and plastered in and about, and added on to these, there is a considerable amount of both enamel and cement of very irregular formation. Very many of the pulp chambers are partially filled with calcosphereites. These also appear in many parts of the specimen in profusion.

It is interesting to note the resemblance of this Odontome to the normal structure of the teeth of some of the lower orders of animals, especially some species of fishes, in which there are branching and radiating pulp cavities. These forms are well described by Charles Tomes.

These forms of Odontomata are exceedingly rare, if we may judge from the reports we have thus far been able to find; yet it is important that they be properly understood when they do occur, for they do not always drop out of themselves as this one has done, but are inclined to give very serious trouble. We will give a condensed resume of the cases reported thus far; that is, all that have come under our notice. In doing this, we exclude everything except the complete malformation of both root and crown. They seem to constitute a distinct type, and are more properly *dental tumors* than malformed teeth, and therefore merit the name of Odontomata or Odontome, which we do not think should be applied to simple misshapes of the teeth.

Case 1. Reported by Dr. Jarish, etc. (from Wedl)—Patient, female, 25 years old, weak of body. A tumor was noticed on the back part of jaw. Inflammation occurred, with formation of abscess. A malformed tooth was removed with forceps.

CASE 2. Reported by Prof. Strasky, of Lundberg—Patient 20 years old. Presented tumor on right cheek of several weeks' duration; difficult deglutition and much pain; the jaws were opened with difficulty sufficiently to make an examination. Gums found inflamed and swollen. Diagnosis: Impeded wisdom tooth. Gum was dissected up, and an irregular mass removed with forceps. The wisdom tooth was found directly under it.

CASE 3. Reported by Dr. Steinberger—Patient, female, aged 15 years. Presented very great swelling of the face, with formation of abscess at the angle of jaw. Results same as others.

CASE 4. Reported by Mr. Harrison as occurring in pauper lunatic in an asylum in London—This, after much sloughing of the parts, came away of itself. It was situated in the region of the bicuspids, and was different from the others in its histological character.

CASE 5. Reported by J. Tomes—An incorrect diagnosis made, and a section of the lower jaw removed. An examination made after removal showed it to be an Odontome exactly similar to the one here shown.

CASE 6. Reported by Wedl as occurring in the practice of a distinguished surgeon—A wrong diagnosis was made, and a section of the lower jaw excised.

CASE 7. Reported by M. Forget, of Paris—Patient, male, age 20. His sufferings began many years before. All the permanent molars on the right side of the lower jaw were wanting, having never made their appearance, and their place was occupied by a large, hard tumor. The soft parts were swollen and indurated. Pus escaped from several fistulous openings. A large section of the lower jaw was removed. After examination revealed the fact that the trouble was caused by a large Odontome, under which was found the second bicuspid and one of the molars.

These are all the cases of this nature that have come under my notice. All of them have been similar to the one I have shown, as to the structure of the malformed mass,

except the one reported by Mr. Harrison, which presented a distinct pulp chamber and a more regular formation of the tissues, though, as a tooth, it was wholly misshapen.

These, it seems to me, stand out very distinctly as a class of Odontomata, tooth tumors, or Odontomes, and should not be confounded with mere excrescences upon otherwise well-formed teeth, or malformation of some particular part of a tooth otherwise well-formed. What may be the causes leading to these erratic growths I do not know, but there can be no doubt that they arise from some perversion of the tooth germ. It is quite remarkable that in five out of the seven cases, they have evidently sprung from the germ of the second permanent molar, and that in all of these five cases the wisdom tooth was found directly under the mass; and, furthermore, the trouble arising from them has, in every case, been at, or a little after, the usual time that the wisdom tooth should make its appearance. We have therefore, good reason for concluding that in these cases the trouble experienced has been really in consequence of the impediment offered to the coming wisdom tooth by the presence of the deformed mass; while in the case I have now reported, the attachment was so slight that it was pushed out before the coming wisdom tooth.

In the case reported by M. Forget, of Paris, the conditions were somewhat different, though the report we have is not quite clear. However, it seems likely that in this case the germ of the first molar was at fault, possibly including that of the second.

In the case reported by Mr. Harrison, of London, we have more nearly the normal tooth structure, and a situation in the region of the bicuspids. This case is not quite similar to the others.

The fact that in three of these cases a section of the lower jaw has been needlessly removed through error of diagnosis, and the patients been thus horribly maimed for life, throws a dark stain over the history which should stimulate us, as dentists, to be ready to form correct conclusions should such cases be presented to us.—*Trans. Ill. State Dental Society.*

ARTICLE V.

The Audiphone and Dentaphone.

Dr. Chas. S. Turnbull, of Philadelphia, describes these instruments, in the *Archives of Otology*, as follows:

"The 'audiphone' consists essentially of a diaphragm of hard rubber. This diaphragm is very thin and elastic, and is cut in the form of a square with rounded corners, so as to present a collecting surface about one square foot in size. For purposes of convenient adjustment, it is furnished with neat hard rubber handle, and might easily, says the inventor, be taken for a fan of Japanese pattern. When in use the upper and lower edges are made to approximate by a silken cord, so as to present a convex surface to the speaker and a concave one to the listener. The cord may be fastened at any convenient convexity of the surface of the auditory disk. When adjusted, the upper edge is pressing firmly against the anterior surface of the upper incisors, allowing the upper lip to rest upon the diaphragm, and the deaf person is then ready to listen." If the eye teeth can be used, they generally give the best results. False teeth may also be used, especially if they fit tightly; should they not, however, they may be made to do so by pressing the lower teeth against them. If the natural teeth be too far gone to be used as directed, the roots may in many instances be utilized by having artificial teeth set into them. The handle of the audiphone should be held lightly, and the lower teeth should not touch the diaphragm, nor should it be held between the teeth or pressed too forcibly against the upper ones, thus curving the instrument already bent by the cord. It must be borne in mind that in all cases the vibrations of the upper edge of the disk impart to the upper teeth the sound waves, which are transmitted through them to the cranial bones and auditory nerves.

The audiphone, therefore, is entirely dependent upon the condition of the auditory nerves, because in direct propor-

tion to the inherent power of these nerves—independent of the external and middle ears or acoustic apparatus—is the influence which this and all similar appliances will exert over the hearing power.

Absolute nerve deafness, which is comparatively rare, is in no way whatever benefitted by the application of the audiphone.

This deafness is caused by direct application of the auditory nerve, through malignant, scarlet and typhoid fevers, cerebro-spinal and other forms of meningitis, tertiary syphilis, cerebral tumors, trauma, consanguinity, hereditation, old age, etc.

Profound acoustic deafness, which is likewise comparatively rare, is markedly, and in some cases signally, relieved by the use of the audiphone.

This deafness is caused through direct implication of the middle ear (or conducting apparatus) and its appendages, through the several forms of catarrhal and purulent inflammations, scarlet and typhoid fevers, secondary syphilis, trauma, consanguinity, hereditation, old age, etc.

Those who are *partially* deaf, from whatever cause, as a rule, derive no benefit from the application of the audiphone; on the contrary, many such cases are annoyed by hyperacusis, etc.

Therefore, the number of cases in which "the deaf are made to hear" with the audiphone is comparatively small, when we take into consideration the whole number of our deaf population. Audition will be improved by its use in but few of the many deaf persons who enlist the service of an aurist.

To use the audiphone with success the auditory nerves must be normally sensitive, the hearing power for loud voice, through middle ear deafness, must be reduced to a minimum, and the upper front teeth must be solid. The acoumeter, the tuning fork, a thin sheet of vulcanite, of iron, of ash or poplar wood, and best of all, a sheet of bristol board or sized paper, will in every case enable us to decide

whether the audiphone or its principal can be successfully applied.

Concerning *absolutely deaf mutes* and the audiphone, we need say nothing further. They must be left to the patient teachers of the several methods of educating the true deaf mutes.

To the *semi-deaf mutes*, however, the audiphone will open a new world of enjoyment, and prove a useful instrument, especially in the hands of all instructors in our asylums for the deaf and dumb, in educating children according to Bell's method of visible speech; especially as very few even of those who are supposed to be born deaf are totally without some slight degree of hearing power; hence, nearly all of those educated in the asylums may be taught to speak, inasmuch as their dumbness is owing solely to their want of use of the organs of speech. "Mutes," says the inventor, "will learn to speak by holding the audiphone against the teeth, as already directed, and practicing speaking while it is in this position." It is a good exercise for the mute, at first, to put one hand on the instructor's throat, watch the motion of his lips, while his other hand is on his own throat, the instructor meantime holding the audiphone to the mute's teeth. The mute will *feel* the influence of the sound in his hand on the instructor's throat, imitate it in his own throat, will *hear* the speaker's voice on the audiphone, and will be aided in imitating the speaker by *seeing* his lips, and will also *hear* his own phonation sounds as reflected from the audiphone, and the more readily, therefore, learn to articulate.

Music, its varying sounds and harmonies, as conveyed by means of the audiphone, awakens in the semi-deaf mutes an unusually pleasurable sensation, as manifested by their gesticulations and facial expression.

Under the pretext of being a fan, the instrument can seldom be used, and, being cumbersome and conspicuous, is open to the same objections as the ear-trumpet.

The "Dentaphone" is a naval instrument of the same practical application and acoustic principle as the audiphone,

but constructed more after the plan of the telephone, and it "consists, in brief, of a chambered box (similar to a telephonic mouth-piece) in which is secured an exceedingly delicate, easily vibrating, diaphragm. Connecting this with a wooden tooth-piece is a silken cord of variable length. The person using the dentaphone simply holds the instrument receiver in his hand, in any convenient position, with the tooth-piece between the teeth, and the open side of the receiver facing toward the speaker. The silk conducting line connecting the receiver with the tooth-piece should be kept moderately tight, and may be shortened or lengthened to suit the convenience of the person using the instrument."

The dentaphone weighs but one ounce and a half, and can easily be carried about the person. In testing the instrument, it compares most favorably with the audiphone, and answers fully as well for all requirements.

It is used for precisely the same class of cases as are improved by the audiphone, and bids fair to be a powerful rival.

Concerning an appropriate or descriptive name, we would prefer the term "Dento-Audiphone," and recommend the substitution of fans (made of thin, elastic wood, "bristol" or "binder's boards," which are to be held between or against the teeth, and bent into a curve by pressure from the handle toward the teeth.—*Med. and Surg. Reporter.*

ARTICLE VI.

Chloral Inebriety.

BY DR. J. B. MATTISON.

Inebriety from chloral, like that of opium and alcohol, proceeds from one of two causes—its professional employment till the morbid demand for constant use is created, or else its self-administration till the same result is reached. I have expressed my belief that the share of professional responsibility in the production of opium inebriety is very great, and have no reason to change that opinion. With

alcohol and chloral I think it less. Chloral seems to possess a special adaptability for self-taking; it has such a wonderful power in bringing sleep and mental worry and jar, the reverse of which is so often prominent in almost every department of active life.

Again, I believe the laity look upon chloral with less distrust and as less dangerous than opium; and therefore are more disposed, when in pain or sleepless, to act as their own medical advisers, which, in the present lax restrictions regarding the sale of it and other narcotics, can be accomplished with little or no difficulty.

Then, too, chloral is more efficient than opium in overcoming the tremors, wakefulness, and general dilapidation following a drunken pout, and as such may be used to an extent establishing an additional form of inebriety, although there is a ludicrous lack of truth in the assertion of a Dutch journal, some time ago, "that a large proportion of the so-called 'drinks' which are used in America contain chloral hydrate."

Dr. Richardson asserts that six months after the introduction of chloral in England, its use, outside of the profession, had become quite extensive, and in 1871 he felt impelled to make a report on the subject before the British Association for the Advancement of Science.

Dr. Wm. B. Atkinson states "that when in California, in 1871, he found it in almost universal use. Persons with no pretence to any medical knowledge were constantly employing it in large doses for the relief of neuralgic pains." Dr. Squibb, however, express his belief that the non-professional use of it has largely diminished of late years. Doubtless its not infrequently fatal effects have had much to do with the decrease; and it will prove fortunate if, even at such expense, its use be relegated to professional hands, where it properly belongs.

One reputed quality of opium and alcohol, which is sometimes a pretext for indulgence and a factor in their respective forms of inebriety, does not pertain to chloral—

that is, the power to stimulate mental activity. It dulls and depresses, or, if otherwise, the latter is early and transient.

The prognosis of chloral inebriety is variable. Dr. T. D. Crothers asserts it unfavorable. The disease is less frequent than opium, and much more infrequent than alcoholic inebriety, and I am not aware of any data as to the proportion of recoveries. The danger is a more or less speedy relapse. Much will depend on the length and degree of addiction, freedom from painful organic complication, absence of alcohol or opium taking, individual constitution, and surroundings subsequent to cure.

Another point to be noted is that chloral habitués are exposed to a special danger. While the habitual use of opium admits of its gradual increase without risk, so that enormous doses can be taken with impunity, that of chloral is sometimes the reverse, and serious effects have followed the use of a smaller dose than the patient had for some time been accustomed to taking.

It must not be supposed that all habitual chloral-takers are inebriates, strictly speaking. The subject, like that of alcohol and opium using, has a double aspect—a vice and a disease. A person who habitually indulges in either of these agents, and yet retains sufficient will-power to abandon them, is simply vicious—a proper object of moral suasion; but when volition ends, disease—inebriety—begins.

Treatment.—Either of two methods will succeed in the treatment of this affection—entire and immediate chloral withdrawal, or its more gradual abandonment. The same objection to the former plan presents as in opium inebriety; it causes a profound shock to the system, intense reflex irritation, and great distress of mind and body. By the latter method the same result is reached with much less suffering, and I regard it wiser and more humane.

If the heroic plan be adopted, the nervous disturbance may be expected to subside in from four to seven days. To lessen it, hypodermic morphia, Indian hemp, hyoscyamus,

donium, the bromides, hot baths, and other nervines may be employed. It is important to remember that after habitual indulgence in opium or chloral, much larger doses than usual of other sedatives are essential to produce any effect. The nervous system seems to acquire a special tolerance that renders ordinary doses absolutely inert.

With the sedative treatment must be used a tonic course, especially strychnine, as a nerve strengthener, and iron, preferably the muriated tincture, to enrich the impoverished blood. The observations of Keyes, Thompson, and others would seem to favor the use of hydrarg. bichlor, as an additional agent in restoring the red corpuscles. Full nourishing diet, electricity, out-of-door exercise, and cheerful social surroundings are essential roborative auxiliaries. —*Druggists Circular.*

ARTICLE VII.

A Remarkable Case.

On the 6th December, 1878, a gentleman called and requested me to attend his wife at his residence, as she had for some time past complained of difficulty in swallowing, produced by artificial teeth. On examining the patient's mouth, I found the tongue raised considerably upwards and backwards by a mass of mucous tissues almost as large as the tongue itself, and giving very much the appearance of a second tongue, that is to say, one under the other, only the lower being shapeless. On examining further I found the patient wearing a complete upper plate of gold and vulcanite with springs; these springs I found attached to a lower gold plate on which was one molar tooth on each side, but I could not see nor could I feel any bar of gold or other material connecting the two teeth. I must mention that owing to this enormous mass of tissues, it was almost impossible to see anything whatever; however, in trying to raise the lower plate I found I could not do so, and, on a still closer examination, I discovered that the whole of

the gold bar which usually rests against the back of the front teeth was entirely buried and grown over by a firm fibrous band of tissues. I asked my patient a few questions, and found she had not had her plates out of her mouth for *five years*, and that the difficulty in swallowing had gradually increased for a long time. I then told her I should be obliged to cut the lower plate out, and left to get the necessary instruments.

The same afternoon I called, accompanied by Mr. Willis to assist me. I first cut both springs through close to the lower swivels, and so removed the upper plate in order to get as much room as possible. Mr. Willis then held one end of the lower plate firmly by the swivel-head with a pair of pliers, while I endeavored to cut through the fibrous bands with a straight bistoury, meaning to cut on the gold bar itself for safety; but this I found I could not do, my knife having a great tendency to slip, and it being very difficult to keep the bulging mass of mucous tissues out of the way. I then took a curved bistoury, and with that succeeded in cutting by degrees through the band, Mr. Willis keeping the plate firmly raised the whole time, and so to say following me up each cut I gave.

The fibrous nature of the band was clear, from the firmness with which the plate was bound down, and also from the peculiar sound produced each time the knife was used. I should say that this band was quite one-eighth of an inch in thickness, and extended from the right molar to the left molar teeth. I remained with my patient some time to see that no hemorrhage occurred, and after prescribing a little carbolic acid liq. potassæ as a mouth-wash, left.

Everything went on well until the 9th of December (three days after the plate was cut out,) when my patient complained of the last lower tooth on each side cutting her tongue and causing pain in swallowing. As these were both mere shells with very rough edges, I removed them, and from that time everything was satisfactory.

On the 18th of December I put in a new upper suction plate of celluloid, but I advised her not to wear any lower

piece for a long time, not until all the abnormal growth of tissues had subsided, which I should say would take many months.

I saw this lady's husband about two months ago, and he then said she was perfectly comfortable, but as I have not seen her recently myself I cannot say whether the parts have assumed their normal character or not.

What strikes one as being so marvelous, and which makes these cases so rare, is that anyone can be found who could endure the pain that must occur. We know how painful even a small ulcer is; but in this case the whole gold bar must have ulcerated right under the tongue and then the two ulcerated surfaces united. Yet I could not get my patient to admit that she had suffered any extraordinary pain.

There is only one other case that I know of similar to this, and that occurred in Mr. Turner's practice; I think Mr. Moon also has seen a case something similar.—*Mr. Canton, in Transactions of Odont. Soc. of Great Britain.*

ARTICLE VIII.

Effects of the Long-continued Use of Chloral.

We learn from the *Lancet*, of January 17th, 1880, that at the general meeting of the Clinical Society of London, held on the ninth of that month, Dr. Farquharson read the Report of the Committee appointed to ascertain what deleterious effects follow the prolonged and continued use of chloral in ordinary doses. It stated that seventy special replies and three printed papers had been received in reply to nearly 1000 circulars distributed throughout the profession, followed a few months later by a second appeal, made public through the freely accorded medium of the medical press. Twenty-nine answers state that, after extensive experience of chloral in long continued doses, no ill effects have been observed. Ten of these correspondents enjoy the special opportunities for observation afforded by asylum

practice, and Mr. Curgenven, Dr. C. T. Williams, Dr. W. Squire, Dr. Buzzard, Dr. Clifford Allbutt, and others, furnish cases in which chloral had been regularly and beneficially taken for periods varying from two to ten years. Before proceeding to analyze the replies received from those who had observed inconvenient effects to follow the use of chloral, the committee drew up a brief summary of what has already been recorded on the subject. Their special information has been arranged under the various headings of the schedule, thus: *A. Nervous System.* Fourteen answers record cases in which nervous debility, mental enfeeblement, and convulsive seizures appeared to follow the use of chloral, Dr. Maudsley, Dr. Clouston, and Dr. Lindsay expressing themselves as strongly opposed to its employment in insanity. *B. Circulatory System.* Two answers under this heading note so e cardiac enfeeblement. *C. Digestive System.* Six replies mention digestive disturbance as occasionally following the administration of alcohol. *D. Cutaneous.* Nine correspondents give details of cases in which they observed itching of the skin, lichenous eruption, with deep flushing of face and head, following the taking of stimulants. *E.* Two replies indicate the possibility of urinary irritation being produced by chloral. Inquiry among some of the leading druggists of the metropolis has not established the probability that there is any remarkable abuse, by the public, of the facilities which they enjoy of purchasing for themselves any quantity of chloral. The drug, it may be mentioned, is not included by the legislature among those the sale of which is guarded by the name and address of the purchaser being required to be registered by the vendor. In conclusion, the committee expressed regret that, in spite of repeated appeals to individuals generally and to the profession, by the circular, and through the medical press, they have failed to obtain any more definite information than that contained in the preceding report; and, although the opinions expressed by numerous gentlemen of experience will, doubtless, be

received with the respect which is their due, the committee would have been glad if more facts, from which definite conclusions might have been drawn, had been placed at their disposal.—*Med. and Surg. Report.*

ARTICLE IX.

New York Odontological Society.

The committee appointed in reference to the death of our esteemed friend, Dr. Samuel S. White, submit the following as their report:

The intelligence of the sudden and unexpected death of our friend and co-laborer, Dr. Samuel S. White, of Philadelphia, awakens within our hearts emotions of the most profound sorrow; and while bowing to the Divine wisdom which has taken him away from us, we are impelled to take the first opportunity of paying a grateful tribute to his memory, and to give expression of our appreciation of him, as a man. In so doing, our minds naturally revert to his earlier career, and thence forward to the unfortunate hour which closed a life full of promise, usefulness, honor, and success. All will bear testimony that he was a genial and cordial gentleman of high culture and noble impulse, full of kindly charities, and always alive to the interest of our profession. With us he was ever a welcome guest, cheering and encouraging us in our aspirations, and giving character and tone to our deliberations.

His relations to our profession were of a peculiar character. He was one of us from the beginning. Commencing as a student and following along through a varied career to his graduation. His interests have ever run parallel with our development and growing needs. He was then better qualified than any other man to respond to the demands of our ever advancing profession. Enterprising even to daring. He never failed to take every rational opportunity to develop and establish any prospective good to our calling. While recognizing the hand of Providence

in thus removing from our midst in the very fullness of his prime and usefulness, our friend, Dr. Samuel S. White, and while deploring our own loss, we do as a Society, tender to his family and friends our heartfelt expression of sympathy and condolence.

CHAS. E. FRANCIS,
BENJ. LORD,
WM. JARVIE, JR.
W. H. DWINELLE,
A. L. NORTHROP.

EDITORIAL, ETC.

Fortieth Annual Commencement of the Baltimore College of Dental Surgery.—The fortieth annual commencement of the Baltimore College of Dental Surgery was held on Thursday evening, March 4th, 1880, at the Academy of Music, in the presence of an audience which occupied every part of that immense building. The members of the Faculty, the Graduating Class, and a number of visitors, including eminent dental and medical practitioners from at home and abroad, occupied the stage, which was rendered very attractive by the beautiful floral display in the form of bouquets and other designs, for presentation to the graduates. The music, which was finely rendered in the form of selections, marches and waltzes, was furnished by the Fifth Regiment Orchestra, Prof. Itzel, Director.

The exercises commenced with prayer by the Rev. F. H. Kerfoot, of Eutaw-Place Baptist Church.

The announcement of the graduates was made by Prof. Ferdinand J. S. Gorgas, Dean of the College, together with the authority by which the degree of "Doctor of Dental Surgery" was conferred by the institution. By a singular coincidence the graduating class at this, the *fortieth* annual commencement numbered *forty* members.

The Dean then conferred the degree of "Doctor of Dental Surgery" upon the following gentlemen:

		Subjects of Thesis.
C. James Barber,	*New York.*	—Neuralgia Faciei.
Frank A Barrett,	*Dist. Columbia.*	—Alveolar Abscess.
John D. Basehore,	*Pennsylvania.*	—Neuralgia.
John S. Billopp,	*Maryland.*	—Irregularity of the Teeth.
John H. Burnett,	*South Carolina.*	—Sensitive Dentine.
Oscar Frederick Coe,	*New York.*	—Pericementitis.
Frederick H. Cole,	*New York.*	—Anatomy of the Teeth.
Pastor A. Cooke,	*South America.*	—Irritation.
H. V. Desportes,	*South Carolina.*	—Treatment of the Dental Pulp.
Josiah W. Foreman,	*Virginia.*	—Dental Replacements.
James W. Gorden,	*Maryland.*	—Preservation of Dental Organs.
Milton H. Gross,	*Pennsylvania.*	—Inflammation.
William T. Harban,	*Maryland.*	—Dental Caries.
Joseph S. Hartman,	*Virginia.*	—Irregularity of the Teeth.
William Hawkins,	*Tennessee.*	—Extraction of Teeth.
Garnett L. Hills,	*Dist. Columbia.*	—The Temporary Teeth.
Nat. A. Hollinshead,	*Georgia.*	—Dental Irregularities.
B. M. R. Hopkinson,	*Maryland.*	—Replacement of Oral Organs.
Louis C. F. Hugo,	*Dist. Columbia.*	—Irregularities of the Teeth.
Thomas M. Hunter,	*North Carolina.*	—Dental Caries.
Albert B. King,	*Maryland.*	—Dental Caries.
Alexander Leeds,	*Maryland.*	—Diseases of Dental Pulp.
Frank P. Lewis,	*Pennsylvania.*	—Stomatitis.
Burrows Nelson,	*Dist. Columbia.*	—The Antrum and its Diseases.
Carl H. E. Obermuller	*Germany.*	—Fracture of Inferior Maxillary.
John C. Oeland,	*South Carolina.*	—Alveolar Abscess.
Elisha T. Payne,	*New York.*	—Methods of Practice from [Experience.
Samuel A Peden,	*Pennsylvania.*	—Plaster of Paris for Impression.
James A. Peirce,	*Virginia.*	—Irregularities of the Teeth.
Marion Pirkey,	*Virginia.*	—Preservation of the Teeth.
J. M. Quattlebaum,	*South Carolina.*	—Materials for Filling Teeth.
Henry L. Rankin,	*Virginia.*	—Digestion.
Abraham V. Robbins,	*Pennsylvania.*	—The Brain.
J. R. Smith,	*South Carolina.*	—The Mandible.

M. F. Thompson,	*Dist. Columbia.*—Irregularities of the Teeth.	
Louis A. Thurber,	*Louisiana.*—Development of Tooth [Structure.	
John H. Twyman	*Kentucky.*—Neuralgia.	
I. N. Van De Water,	*New York.*—Operative Dentistry.	
Louis G. Wietfeldt,	*Germany.*—Irregularities of the Teeth.	
John L. Wolf, M. D.,	*Dist. Columbia.*—Operative Dentistry.	

The Honorary Degree was conferred upon Thomas Brian Gunning, of New York.

After the conferring of degrees, Dr. Gorgas introduced Gen. Bradley T. Johnson, who said he had been assigned the pleasant duty of giving the graduates of 1880 a godspeed upon their future course. He could understand that after years of residence in Baltimore a man would form ties which would bind him to her people, for on the other side of the Potomac it was said that when a good Marylander died he always hoped to go to Baltimore. Possibly of all communities in this land, it is one with the largest, most liberal, most catholic spirit. There has never been a time in Baltimore's history when she did not take to her generous heart men of all nations, and when once she has adopted them she makes no difference between them and those "to the manner born." It was with the good wishes of such a people that this class was starting in life. May the careers of its members in after-life prove that they had learned while living here lessons of truth and honor as well as lessons of science—for truth and honor only would bear them prosperously and happily through life. He then spoke of the advance which science has made in the past century towards controlling the forces of nature so as to make them subserve man's comfort and happiness, and besought them, as scientists, to continue in their generation this great work of civilization. Concluding, in the name of the Faculty, he wished them godspeed in a future of prosperity, founded on their own ability and merit.

The class address was made by Burrows Nelson, grandson of John Nelson, of Maryland, formerly Attorney-General of the United States. B. Merrill R. Hopkinson, a member of the graduating class, sung a solo, winning an enthusiastic encore, and displaying great ability as a singer. The exercises were closed with a benediction by Rev. Mr. Kerfoot.

The class officers were as follows:

President of the Class—J. Ryerson Smith.

Vice-President—Samuel A. Peden.

Secretary—J. M. Quattlebaum.

Treasurer—J. D. Basehore.

Executive Committee: J. S. Billopp, Chairman; Louis C. F. Hugo, Garnett L. Hills, Albert B. King, I. N. Van De Water, J. H. Twyman, T. M. Hunter, C. J. Barber, F. P. Lewis, F. A. Barrett.

Alumni Meeting.—The annual meeting of the Alumni Association of the Baltimore College of Dental Surgery was held in the College Building, on Thursday morning, March 4th, commencing at 10 o'clock.

A large number of Alumni were present, and great interest was manifested in the proceedings. The election of officers for the ensuing year resulted as follows:—President—Dr. S. J. Cockerille, of Washington, D. C. First Vice-President—Dr. W. H. Hoopes, of Baltimore. Second Vice-President—Dr. Wm. A. Mills, of Baltimore. Treasurer—Dr. A. W. Sweeny, Jr., of Baltimore. Secretary—Dr. L. M. Cowardin, of Richmond, Va.

The College Prizes were announced as follows:—For best clinical operator, Thos. M. Hunter, of Enfield, N. C. Prize: Set of Harris' Forceps, from S. S. White, Philadelphia. Honorable mention of J. Ryerson Smith, of Williston, S. C.

For best Thesis and Appliances for Correction of Irregularities of the Teeth. Louis C. F. Hugo, of Washington, D. C. Prize: Dental Engine, from S. S. White, of Philadelphia. Honorable mention of N. A. Hollinshead, of Fort Valley, Ga.

The best set of Artificial Teeth on metal base. Thomas M. Hunter, of Enfield, N. C. Prize: Set of Varney Pluggers, from S. S. White, Philadelphia.

For highest number of votes for final examinations. Thos. M. Hunter, of Enfield, N. C. Prize: Bartholow's Mat. Med. and Therapeutics, from Prof. Gorgas.

MONTHLY SUMMARY.

Duplicating Vulcanite Plates.—I have fallen upon the following plan or modus operandi: When a plate is presented, it matters not how badly broken, so the pieces are all on hand, we unite the broken parts together with wax and model nicely, then mixing some plaster and pouring it into the lower section of the flask, press the plate into it, teeth looking downward, allowing the plaster to come up above the gums of the teeth, we slope it off towards the rim of the flask, then varnish and oil applied to the plaster, the inner side of plate being kept perfectly clean and free from plaster, varnish or oil. The second section of flask being now placed in position, the plaster is mixed and poured in and the flask carefully shaken until we are assured that every part of the plate is thoroughly covered. It is then allowed to harden perfectly. The vulcanizer is now filled half full of water and heat applied; when steam is raised, the flask is put therein. It is allowed to remain until it is thoroughly heated by a considerable amount of steam. The flask is then quickly removed, and rapidly, though carefully separated, and as soon as this is done, the rubber, which is now found in a semi-soft state, must be pulled hurriedly, though with some degree of care, out and away from the teeth and pins. It usually yields from them as readily as gutta percha base plates, and leaves the teeth intact, and pins clean and nice for packing. If it does not yield readily heat it again and remove at, before described. After this is accomplished, cut ways for excess of rubber; pack, vulcanize and finish in usual way. I have had such fine success by this method that I now never attempt to mend a plate in the ordinary way, but always duplicate. I find it requires less time, is decidedly more satisfactory, and usually for free charge, half price of a new plate. It is every whit as perfect as a new one. If a section of teeth is broken off I fit a new one in place, model with wax, imbed in plaster, and proceed as before described.

There are no doubt some to whom this method will be new, and if I have succeeded in giving them any new ideas on the subject of duplicating vulcanite plates, I will feel that I have been fully compensated for the efforts of this paper.—*Dr. W. R. Holmes, in Dent. Luminary.*

Skin.—A Microscopical Study of its Inflammation.—Dr. C. Heitzman, from his observations of inflamed skin, concludes: (1) In epithelium the first step of the inflammatory process consists in an increase of living both in and between the protoplasmic bodies, the former producing the coarse granulation of the epithelia, and the latter the thickening of the so-called horns in the cement substance. Any particle of living matter, either in the epithelia or between them, through continuous growth, may lead to a new formation of epithelial elements with the termination in hyperplasia of epithelium (psoriasis, squamous eczema, horny formations, etc.) (2) In connective tissues, the first manifestation of the inflammatory process is the dissolution of the basis substance and re-appearance of the protoplasmic condition by which process and the new formation of medullary elements the inflammatory infiltration is established. The sum total of the inflammatory elements which remain united with each other by means of delicate offshoots, represents an embryonal or medullary tissue. If the new formation of medullary elements be scanty, the resolution is accomplished by reformation of basis substance (erythema, erysipelas, etc.) If, on the contrary, the new formation of medullary elements be profuse, a new formation of connective tissue (hyperplasia) will result. (3) The plastic inflammation may be accompanied by the accumulation of a large amount of a serous or albuminous exudation in the epithelial layer (miliaria, udamina, herpes,) or in the connective tissue of the derma (urticaria. (4) Suppura- in the epithelial layer of the rete mucosum is produced by an accumulation of an albuminous or fibrinous exudation, by which a number of epithelia are destroyed, and by a new formation of pus corpuscles from the living matter of the epithelia themselves. (5) Suppuration in the connective tissue of the derma results from the breaking apart of the newly-formed medullary elements, which, being suspended in an albuminous or fibrinous exudation, now represent pus corpuscles. Pus is a product of the inflamed connective tissue itself, and always a result of destruction of this tissue.—*Boston Med. and Surg. Journal.*

Uralium, a New Metal.—As far back as 1869 the author discovered this metal in commercial platinum obtained from Russian ores. Next to silver it is the whitest metal known; its malleability is as great as that of the purest platinum, but its ductility is much greater, and it is almost as soft as lead. Its melting point lies near to that of platinum, and it is not volatile. Its specific gravity—20.25, and its molecular volume, like those of osmium, platinum and palladium, is 6.25. Its atomic weight has been found 187.25. In its chemical properties it is difficult to distinguish from platinum.—*A Guyard.*

Excellent Glycerine Ointment.—A very good preparation of glycerine to have always on hand, can be readily prepared by any apothecary or druggist: In two ounces of Sweet Oil of Almonds melt, by a slow heat, half an ounce of Spermaceti, and one drachm of White Wax. Then add one ounce of good Glycerine stirring until cold. When cold, scent it by stirring in well a little Oil of Roses. Keep in small jars or small wide-necked bottles. In hot weather keep closely corked, as it sometimes gets a little rancid if long exposed to warmth. Half or a fourth of the above quantities may be used. Every drug store should keep a jar of it, and recommend its use. It is excellent for softening the skin, for most injured skin surfaces that are not open sores; for chafed places, for moistening corns or callused feet or toes, and especially for chapped face, lips, or hands. When the hands are chapped or cracked, or roughened by cold, wash them clean with soap, and rub them well with this glycerine ointment, wiping it off enough to prevent soiling clothing. If this is done at night, the hands will be soft and in good condition in the morning, except when deeply cracked. It is very good to apply to the hands after "washing-day." This is an excellent preparation to use by those afflicted with the distressing trouble known as hæmorrhoids or piles.—*American Agriculturist.*

Replanted Teeth.—Miss K——, age eighteen years, called with left inferior first molar aching terribly; used various remedies to ease at once—no success. Extracted, removed partially devitalized nerve, cleaned thoroughly the two roots, wiped out with carbolic acid (Calvert's pure crystalized,) filled roots with gold moistened with the same; then filled the cavity, washed out the sockets of the roots with tepid water, and forced tooth into place, applied tincture of calendula to gums and parts every morning for three days. Very little pain was caused, and soreness all gone in three days. Same tooth a short time since was doing well after three years' use. No abscess formed.

Mr. S——, age twenty-five years, same as above, only first inferior bicuspid, used tincture calendula and tincture of iodine and aconite root, equal parts, alternately, for three days.—*Dent. Luminary.*

Another Discoverer of Anesthesia.—Anesthesia will soon have as many discoverers as Homer had birthplaces. In addition to the four already known to fame—Morton, Jackson, Wells and Long—a fifth claimant now appears in the person of a Dr. Wilhite, still living in South Carolina, a student of Dr. Long, to whom he imparted a knowledge of the subject. It is said that Wilhite's friends intend to push his claim.—*Pacific Med. and Surg. Journal.*

The Physiology of Saliva.—The action of saliva from the mouth in digestion has lately been studied by Herr Von der Velden. By extraction, with the pump, of numerous samples of gastric juice in various stages of digestive process it was demonstrated that in the first period after taking a meal (three-quarters to one, or even two hours) free hydrochloric acid did not appear; it was met with only later. Further, it was shown that only so long as the hydrochloric acid continues to be absent, is starch saccharified (iodide of potassium presents only a bright yellow color); whereas, after occurrence of the hydrochloric acid, the starch remains unaltered (blue coloration.) There is accordingly, a first stage of stomachic digestion, in which alone salivary action can take place; and a second, in which albumen digestion begins, or, at least, arrives at full intensity.—(*Med. Press and Circular.*

Pathological Changes Observed in One Hundred Glaucomatous Eyes.—Dr. Bailey (*Brit. Med. Jour.* Aug. 30, 1879,) gives the results of a microscopical study of the pathological changes observed in one hundred glaucomatous eyes. He found adhesion of the base of the iris to the periphery of the cornea; atrophy of the ciliary muscle, especially of its circular fibres; dilatation and thinning of the circulous arteriosus major; and in about half the cases similar changes in the long ciliary arteries. The canal of Schlemm was often diminished. The changes in the ciliary muscle and iris were sometimes confined to a part of the circle, and in some cases followed injury. These changes Dr. Bailey regards as proving that the atrophic changes referred to were the cause and not the consequence of the glaucomatous process. In the specimens from recent glaucoma there were adhesions at the base of the iris only.—*Boston Med. and Surg. Journal.*

Chloral an antidote to Strychnine.—Prof. Huseman, of Gottingen, has discovered that chloral hydrate is not only an antidote to strychnine, but to the mixture of strychnine bases, sold under the name of brucine. It has also a counteracting effect upon the opium alkaloid thebaia. But although chloral hydrate will stop the spasms caused by chloride of ammonium, the patient will die of paralysis of the respiratory centre, a result probably of the joint influence of both substances. In a certain degree the hydrate of chloral antagonizes picrotoxia, codeia, and calabaria. It is of little use in poisoning by baryta or carbolic acid. —*Exchange.*

Replanting of Teeth.—Dr. J. N. Prather, of San Francisco, Cal., writes: I notice in the August number, page 144, your paper, that "Dr. Thompson, of San Francisco, is now in London showing the profession there his new method of replanting teeth." That the minds of your readers may be further enlightened, I will state that replanting teeth is no new discovery, but has been practised more or less for ages. But the profession considers the replanting of teeth very impracticable, except in isolated cases. When a tooth is extracted the nerve is severed, and death to the tooth is inevitable; when returned to its former position, if properly anchored, it may adhere as strongly as ever to the surrounding parts, yet a tenderness will almost invariably be felt in mastication; they frequently act as irritants and ulcerate at the apex, thus becoming disagreeable and offensive, the crown turns dark, and it is thought they are more susceptible of decay.—*Med. Record.*

The Audiphone.—This is a new instrument for assisting the hearing of the moderately deaf. It consists of a flexible sheet of hard rubber with a handle attached, the whole resembling very much an ordinary fan. A string is attached in such a way that the rubber plate can be bent over towards the handle to a greater or less curve. The instrument is held in the hand and the top edge laid against the teeth, the convexity of the curved plate being out. The apparatus is quite ornamental, and is probably of assistance in some forms of deafness.—*Med. Record.*

Ink on the Carpet.—Ink freshly spilled upon the carpet should at once be taken up with soft paper or a slightly damp sponge, or even a damp cloth, care being exercised not to spread the spot. After all is taken up that can be, wet the sponge—after first washing it clean—in warm water, and thoroughly scrub the spot on the carpet. When no more can be washed out, wet the spot with a weak solution of Oxalic Acid, and after a few moments, wash off with cold water, and finally sponge with a weak Ammonia Water, to neutralize any of the acid that may remain in the carpet.—*American Agriculturist.*

Japanese on Blood Letting.—The Japanese do not countenance blood letting. They say the blood is too precious a fluid to be thus wasted. The copious drinking of hot water is one of their favorite prescriptions.

Frequency of Bright's Disease.—Nearly ten per cent. of the policy holders in a prominent life insurance company in this country are shown by statistics to die of Bright's disease.

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ARTICLE I.

New Methods of Mounting Artificial Teeth.

[Transactions of Ohio State Dental Society.]

Dr. J. Taft.—I desire to make an inquiry in reference to this subject. Some months ago Dr. Holbrook, of Wisconsin, came to Cincinnati with what he claimed a superior mode of preparing plates, more especially in regard to their attachment to the mouth. Some of the members present have made experiments with this process. Dr. Berry and some others, perhaps have done so. In behalf of his process he had some very strong statements from men high in the profession whose opinions I have not been disposed to overlook or disregard. For instance, he had a very commendatory statement from Dr. Haskell, of Chicago. Now those who know Dr. Haskell would not suspect him of trumping up a statement in reference to a matter of that kind. Dr. Haskell makes the insertion of teeth on artificial plates a specialty almost, and continuous gum-work is the material he employs more than any other, and he claims that the method which was suggested is very good.

The method consists simply in trimming either the impression or the model at certain points to relieve the

bearing and perhaps to some extent, to make space—at least to relieve the plate everywhere in the mouth where there would be undue pressure upon the hard parts. For lower plates it was considered especially good, as with it we can in almost all cases, not only have the plate set well in the mouth, but give adhesion by atmospheric pressure, same as with the upper plates. I did not see experiments enough to have much knowledge of it. He made experiments with one or two extreme cases at our office, but did not get the success he expected, notwithstanding at the outset he requested to have what were regarded as the very worst cases. We gave him a couple, not of the worst sort, but not by any means good cases, and the plates, though worn still, I believe in both cases, do not set much better than those used before. I desire to know if anybody knows anything experimentally about the utility of this method. We have had two or three other statements from other members of the profession in reference to it.

Another method is advertised by some man in Chicago, in which he claims to be able to insert in the mouth artificial sets of teeth without the large plates ordinarily used, and firmly, so that they will be serviceable. I do not remember his name: If anybody here does, I would like to hear something about it.

Dr. L. Buffett.—What Dr. Taft has stated is nothing new to me. I commenced about twenty-two years ago to study dentistry, and the doctor I was with would take a model in his hand and examine the mouth, and wherever he saw it would fit closely on the hard tissues he would trim the soft portions and also instructed his pupils to do the same. I think it is nothing more than Dr. Taft used to do.

Dr. W. M. Herriott.—Did you mean the impression or the model?

Dr. Buffett.—I meant the model.

Dr. Berry.—I believe in re-inventing a good thing if it is forgotten, and re-inventing it again and again. Now in

regard to the matter claimed by Dr. Holbrook, I would say that he called on me and told me his price for the right to use his improvement. I promised him this: that I would either pay him his fee of ten dollars or never use it if he explained to me his process. He very frankly told me all about it with that assurance, and I paid the fee to him forthwith, and am fully satisfied with it. I think it an invention that is a very great improvement in many cases. It is intended for lower plates. You all know that in many instances where there are superior plates and mastication is performed only on the lower front teeth, the hard parts pass away and the gums become flabby, which is rather troublesome to dentists, to say nothing about patients. I have used it in two such cases with very satisfactory results. I would not like to dispense with it, and would give ten dollars for any improvement that would give me as much satisfaction as that.

Dr. Buffett.—I would ask if it consists simply in trimming the model where it bears upon the hard parts.

Dr. Berry.—Trimming in that way makes a great deal of difference, but that is not the patented improvement.

Dr. Buffett.—Members of the profession practice that. But it is well to take into consideration the fact that if you trim the model too much, there will be absorption of the tissue under it.

Dr. Berry.—We must, of course, be careful in that respect.

Dr. W. M. Herriott.—Dr. Holbrook is doubtless honest, and thinks he has a very good thing, but it is just, as Dr. Buffett said, the same thing as used by dentists many years since. I used it as long as twenty years ago. By trimming the bearings on the hard parts, the pressure would be taken off of these parts and it would thereby prevent the rocking of the plates, which would occur unless we would use an air chamber or some such principle to remove the pressure on those parts. But this process of Dr. Holbrook's is not new at all, but has been used, as I said, many years by the

profession. The point is this: Dr. Berry put himself in a position where he could not help doing that which, as I believe, the doctor did long years ago. I would ask Dr. Berry if that is not true. Didn't you, by the use of the air chamber or trimming your cast, accomplish the same object?

Dr. Berry.—We all know that the wise man Solomon said a long time ago that there is nothing new under the sun. We need not expect anything new, but if anything is forgotten—and I suppose a great many of us have forgotten more than we know now—if anything is forgotten and passed out of use, the man who brings it up again, though he may not have been the originator of it, does a good thing. Now so far as that matter is concerned, I never heard of it before; but I suppose there are forty things I have done as valuable as that, which I may have forgotten. Indeed, I sometimes recollect things I used to do and had forgotten, which prove very valuable to me. This mode of Dr. Holbrook's is not for the fitting of superior plates, but for the lower ones. I have used it with satisfactory results. I put myself in the way of learning something I did not know before.

Dr. F. A. Hunter.—I think we are laboring under a misapprehension in this matter. As I understand it, Dr. Holbrook's invention is not being talked about at all. It is not trimming the model. Dr. Berry has not said what it is. He has paid for it and don't like to say anything about it. It is nothing more than an air chamber.

Dr. H. A. Smith.—Dr. Holbrook's is a patented method. Any, who choose, may refer to the patent records for the mode. Being, all of you, honorable men, of course you would not use it without a license! The method is chiefly applicable to lower sets of teeth, and is simply relieving the bearing upon the ridge, and throwing it mostly upon the edges of the plate. Now if any of you have discovered the secret, it must be owing to your ability to penetrate the mysteries rather than to the clearness of my description of the modus operandi.

Dr. D. R. Jennings.—Dr. George Hurd, of Cleveland, had the same thing patented twelve years ago.

Dr. F. A. Hunter.—Is it a good thing?

Dr. H. A. Smith.—I think it is a good thing if the patient can tolerate a thing of that kind. My idea is that the more bearing a plate has the more comfortably it is worn; that is, if the bearing is equalized both on the hard and soft parts, every portion of the bearing surface doing its work.

Dr. J. H. Warner.—It seems that this new process of mounting artificial teeth is simply an air chamber in lower sets of teeth instead of upper ones. The practice of cutting away any portion of the cast is equivalent to producing an air chamber. It produces undue bearing somewhere, and to that extent is an air chamber. It is an air chamber *in the degree of its pressure.* If cut away to a large extent it is a deep air chamber. If cut away slightly it is still an air chamber. Now, the experience of the profession for twenty or thirty years, has shown to every candid observing man, that an air chamber is, under almost every circumstance, a nuisance. They are something to be avoided whenever and wherever they can be, and whenever an air chamber is produced a vacuum is produced, which fills up sooner or later. An air chamber is of use only for the first few weeks; at least plates worn in this way cause the soft tissues of the mouth to be torn and a state of congestion sets in to the same degree that you reduce the equal bearing of the plate, and to the same extent that you introduce your air chamber. Those who have observed the effect of air chambers, especially those that were made large and deep, ten or fifteen years ago, will agree that air chambers are to be avoided whenever it is possible to do so. It may be proper in very rare cases thus to put in an air chamber and to endure it in the mouth, still it will be of little or no use after it has been worn a month. In my own practice I do not think I have had to use one in twenty years. In a lower plate it is essentially necessary to have

all the bearing surface of the plate there can be. Sometimes in taking an impression it will produce an undue pressure on some portion of the mouth, and that undue pressure would be more likely to come upon the superior border of the ridge than upon either side of it, and in some cases it may be necessary to relieve the plate there, and to bring it more on the sides so as to afford relief, but it should at all times be equal.

Dr. J. Taft.—Another plan for the insertion of teeth on artificial plates may be referred to here. I don't know that they are used much in this country, but they are in England. In that style of work the ordinary plates are used, with Ash's teeth put on pivots or standards soldered to the plates, and attaching them with little nuts or sulphur, bringing them down to their place.

I saw, not long ago, a set of teeth of this construction that looked very well, and presented the natural form of the teeth to the tongue in the mouth. Would not this style of work be very applicable for some cases? It is a very easy style of work to construct, the material used being platina, gold, or whatever may be desired. Teeth when broken off, can readily be supplied. In regard to preserving the natural form of the mouth and parts, and as to articulation, it seems at least as good as any method we have. You know, on gold plates, according to the old method, articulation is very frequently injured because of the change of the form of the parts about the tongue. In plates, with this arrangement, that can be restored.

Mr. Ash makes these teeth with tubes running through the crown to the base of the tooth, and they can be very easily regulated and arranged so as to give any form or expression that may be desired. It would be something new in this country, I think.

Dr. Butler.—I would in the first place tike to refer to this method spoken of by Prof. Taft, which is quite commonly used in England, and by the best operators there, in attaching porcelain teeth to plates. The ordinary way

is to prepare the plate in the common form of gold or platinum, then grind the teeth with care to secure a close adjustment to the plate. The style of teeth used are known in the market as Claudine Ash & Son's make, of London, with a platinum cylinder through the axis of the tooth. After the teeth have been arranged, a mark is made upon the plate through the cylinder, for soldering the dowels into the plate; then the teeth are slipped on and secured in position with sulphur melted around the pin, and if they want to make a real nice thing, it is made with a little receiving socket along the outer border of the plate, giving a strong bearing for the teeth and strength of edge to the plate. A pi ce nicely constructed with these teeth, gives a nice presenting surface to the tongue; and then they being set up singly, you can give expression to a set which cannot be obtained with block teeth.

Now, with reference to attaching of crowns to roots of teeth, that has been called up here by reason of claims set up by a man named Richmond, a certain systematic course of manipulations was insisted upon in order to secure practical results, but the old iron bedstead rule is not *always* the most comfortable, to say the least. What we are most interested in is modes that will enable us to manage the various cases in the best manner; no one plan of attachment will secure this end, and the degree of success of any mode recommended will depend upon the skill and care of whoever attempts its use. I have not tried any by this plan upon the incisors, either superior or inferior; but have set them on the cuspids and bicuspids. The plan we would speak of is one that may be pursued in cases where the pulp is alive in the root, the crown being broken down by decay or otherwise. First obtain some measurement of the teeth that will guide you in the construction of the crown for length, then take an impression of the stump and adjoining teeth; having secured a model, you can with care construct a crown ready for setting. Take gold plate twenty carets fine, of sufficient thickness for strength, make

a band that will fit tightly around the stump and of sufficient width for length of crown; now solder into one end a piece of gold about one eighth of an inch in thickness, of which to form the cusps; you can now finish it up to correspond in shape to the other teeth; in the final adjustment the stump may have to be trimmed to secure a parallel bearing as nearly as possible where the crown is driven, or, if it be possible to slip a bit of *thin* dam over the stump while working, all the better, carrying it well up under the gum.

Now take your crown and bevel the outer edge of the portion to be telescoped on to the root; having a small hole drilled in the masticating surface to allow any excess of the silicious cement to escape when you drive the crown to its place. The edge of the gold should go fairly up under the margin of the gum. I have set some crowns without the escape, but it requires more care to gauge the amount of cement to fill the interspace. I have attached some crowns in this manner and they have been and are doing good service. I like the Weston insoluble cement, mixed pretty thin, so it gives time to drive the crown home.

I think crowns put on in this way secures the preservation of the root with a living pulp, and less tax on the time and comfort of the patient and operator than is required to make a restoration operation in the ordinary manner, and we may confidently expect them to last as long or longer than the old style of pivoted crowns.

Dr. Corydon Palmer.—In reference to setting gold caps over the stumps as Dr. Butler described, I have something in my own mouth which I prepared entirely myself, performing the whole operation from beginning to end. I pursued the same course described, except that I made a little hole in the top, so that in forcing it down to position the cement might be forced out. It has been worn a considerable time, having been in constant use something over three years. It was done before Richmond became the inventor of his system, or before it was heard of. The inferio

bicuspid was made to fit nicely. I put on the dam myself and had already put some cement in and forced it down into its place, being the only fastening which I think is applicable in those cases where there is enough crown to give sufficient support and attachment. If you begin down to the gum or nearly so, as Dr. Horton speaks of, I cannot see how the attachment can be sufficient to hold it.

I would like to say something in reference to the other subject—that of trimming models and fitting plates—because I think all of us have experimented in that way from our first beginning of fitting plates to the mouth. It was one of the first ideas I had advanced to me, or thought of, to trim off a portion of the model here and there, so as to take the bearing off the hard part and put more on the soft parts, equalizing it. It is in the under plates where the most difficulty occurs. In the first place, when taking the impression, the soft part is liable to be forced down too far, so as to give a sharp ridge on the cast, and when we fit it the pressure comes too severely upon the soft tissue, and the patient complains that he cannot wear the plate. Now cutting out the impression, or adding on to the model there, so as to make it deeper along the edge of the ridge would have the same tendency, because it makes the plate to rest upon the soft tissues. I have always found there was where the greatest difficulty occurred, and I have endeavored to take my impressions with the plaster as soft as I could use it so as to prevent the pressing of the soft tissue down too much.

One of the most successful cases I ever had was where the ridge was quite prominent. I so formed the plate that it did not touch the ridge at all. When put into the mouth it did not seem to fit very well, but it gradually settled down to its place and finally set very well, and I never had to make any alterations in it though put in before the war. So I think there is more necessity of relieving the middle of the plate than of adding on to the model, so as to make them press harder.

Dr. C. Von Bonhorst.—With regard to fitting lower plates I have had some little experience, and that experience has proven that it makes but little difference as to what the plates are made of, providing that the adaptation is perfect, and that the impression is correctly taken, and that the edges of the plate do not impinge too much upon the soft tissues; and where there is an irregularity or a tendency to cause irritation by too sharp an edge, either on the outside or inside of the ridge, I have invariably made it a rule to round off these edges. If made of gold plate, I solder around the edge of the plate a half round gold wire, enabling me to give a round edge where it comes in contact with the soft tissues. Where the plate is made of rubber, this is done more easily by making the edges a little thicker at the start. I always avoid getting undue pressure upon the soft tissues, but have it come where it properly belongs, viz: on the hard portion of the ridge. Many abject failures are caused by the belief that the plate must run down as deep as possible in order to get any suction, and get the plate to stay there. But a shallow, well fitting plate will give much more satisfaction to the wearer than a deeper one that infringes upon the soft tissues and movable muscles, as the motion in eating or talking will throw the plate off.

In regard to the suction in upper plates, I rarely use an air chamber. After making the cast I study the muscular attachments, then with a half round, pointed instrument mark a line all around where I intend the edge of the plate to terminate when finished. This makes an indentation in the cast; of course a corresponding elevation in the plate, when of rubber, near the edge. "In the case of gold plate solder, on a half round piece of wire all around the plate, as first stated." The marking out on the cast also serves as a guide in filing up the plate, so as to save trouble in doing so after the patient comes to have it fitted, as you have made your calculations before. This little ridge formed by the marking on the cast, or the soldering on of

the wire, makes a slight indentation on the soft tissue, and consequently obviates the necessity of an air chamber, and where it impinges a little too much, is easily relieved by filing down at the point indicated.

You thus equalize the pressure all over the roof of the mouth, and avoid too much pressure on the palatal artery, which is a matter entirely ignored by many dentists. The plate may not adhere at first like one with an air chamber, but explain to the patient the difference, and that after a few days or weeks wearing, all will be right. They will then not expect too much at the start, but will give you credit for honesty, which is a factor of no small importance in the reputation of a dentist.

[TO BE CONTINUED.]

ARTICLE II.

Sale of Diplomas.

The following communication has been received from the Bureau of Education, and we trust it will receive the attention its importance demands, and this outrage be summarily stopped:

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., March 26, 1880.

DEAR SIR: I have the honor to invite your attention to the following important letter from the United States Minister at Berlin, of the 2d ultimo, and to the communication from the Honorable the Secretary of State transmitting the same to the Honorable the Secretary of the Interior, by whom the paper was referred to me.

The issue of fraudulent diplomas by so-called institutions of learning in our country has been brought in many ways, and often, to the attention of this Office; the institution named in Mr. White's letter is not the only one of this kind known here.

The accompanying data bring out the character of these disgraceful transactions quite unmistakably. After reading them, I trust that you will co-operate in the detection of the offenders and the prevention of a practice so injurious to the credit of learning in the United States, and so opposed to the laws and practices of other nations.

Very respectfully, your obedient servant,

JOHN EATON, *Commissioner.*

To President of
BALTIMORE COLLEGE OF DENTAL SURGERY,
Baltimore, Md.

[*Mr. Evarts to Mr. Schurz.*]

DEPARTMENT OF STATE,
Washington, March 12, 1880.

SIR: I have the honor to transmit herewith for your information a copy of a dispatch (No. 87) of the 2d ultimo, from Mr. White, the Minister of the United States at Berlin, in relation to spurious diplomas issued by a so called American University at Philadelphia. I beg to express the hope that it will be found practicable to devise measures, through the Bureau of Education or otherwise, for the effectual suppression of the practice of issuing spurious diplomas at Philadelphia, which is proving so injurious to the reputation of this country with respect to higher education.

I have the honor to be, sir, your obedient servant,

WM. M. EVARTS.

The Honorable CARL SCHURZ,
Secretary of the Interior.

[*Mr. White to Mr. Evarts.*]

LEGATION OF THE UNITED STATES,
Berlin, February 2, 1880.

SIR: I regret to state that there seems to be a revival here of the sale of diplomas purporting to be issued by an institution of learning in the United States.

Some weeks since a Mr. Pappenheim brought me a diploma, engrossed on parchment in very handsome style, and issued nominally by "the American University at Philadelphia," conferring the degree of doctor of medicine upon one Christopher Schuetz, living, as I understand it, at Leipzig. It would appear that the diploma was offered to Schuetz upon condition of his paying a sum of money for it. It bears the signatures of a number of persons claiming to be professors in the aforesaid University, at the head of them being the signature of "John Buchanan, M. D." Schuetz desired the Legation to give him a declaration of its genuineness and value, which I refused to do. One peculiar feature of the diploma was that, although evidently entirely new and recently issued, it was dated 1872.

About ten days since another and more serious case was brought to my notice. The judicial authorities at Prenzlau forwarded a copy (which I inclose) of a diploma issued by the same alleged institution to Paul Christoph Erdmann Volland, and signed by a faculty at the head of which appears the same name of "John Buchanan, M. D." The authorities at Prenzlau asked the Legation regarding the genuineness of the diploma and the standing of the institution, it being with them a question whether Volland could be allowed to practise his profession under such a diploma.

After looking through the correspondence on record in this Legation (a memorandum of which is inclosed,) and seeking in vain for the name of the institution in the list of colleges and universities published by the Bureau of Education in the Department of the Interior, at Washington, my answer was unfavorable to Volland's claim.

From the correspondence above referred to, I find that attempts have been made by the legislature of Pennsylvania for the suppression of this nuisance; but that, after all, it is a question whether these attempts have been successful, and whether the institution has not still a legal existence. This being the case, I would respectfully suggest that the matter be brought to the notice of the Commissioner of

Education in the Department of the Interior, at Washington, and that he forward me any documents or information in his possession regarding the subject.

You will observe among the papers accompanying the diploma of Volland something much more serious than the diploma itself, and that is the authentication of it by Philip A. Cregar or Gregar, notary public of Philadelphia; and I bring this matter especially to the notice of the Department hoping that something may be done to prevent officials in Pennsylvania lending themselves to what is undoubtedly a fraud, whether under the forms of law or not.

That such cases as these have brought disgrace upon the American system of advanced education and upon the American name in general is certain. This has been recently revealed to me incidentally in a curious way: in a very successful play now running at the Royal Theater in this city, a play written, strangely enough, by a judge of one of the highest tribunals in the Empire, one of the characters, in casting a reflection upon another who is dignified with the title of doctor, declares a belief that the latter had simply bought his degree in America; and in a recent novel, by a popular author here, the scoundrel of the book, having escaped justice in Germany, goes to America, and is at last advices very comfortably settled and practising medicine with a sham diploma which he has bought for money.

All this, of course, is of no especial significance in this case, save as it shows that the fair fame of our country has been and can be injured in the minds of a large number of people even by such contemptible transactions as those herein referred to.

I have the honor to be, sir, your obedient servant,

AND. D. WHITE.

The Hon. WILLIAM M. EVARTS,
Secretary of State, &c.

*The Diploma of Volland.**

Omnibus ad quos literæ præsentes pervenerint, præses, curatores professoresque Universitatis Americanæ Philadelphiæ, Reipublicæ Pennsylvaniæ legibus constitutæ, salutem.

Quum in omnibus academiis rite legitimeque constitutis, aut hic aut ubique gentium, usus laudabilis et antiquus fuerit, ut viri, qui vel literis vel artibus ingenuis, vel quibuslibet studiis liberalibus, non minus diligenter quam feliciter operam dederunt, interea recte atque honeste se gerentes, aliquo eximio honore adornarentur, et ad meritam dignitatem attollerentur, et quum nos, secundum leges reipublicæ nostræ, amplissimam potestatem insigniendi decorandique titulis academicis, et promovendi ad gradus in sacra theologia, legibus, artibus liberalibus ac medicina viros bene merentes teneamus, nos igitur, hac auctoritate præditi, usûsque antiqui haud immemores, decrevimus virum egregium, studiis optimus deditum, *Paul Christoph Erdmann Volland*, de cujus eruditione in *chirurgia dentaria arte* et probis moribus satis compertum exploratumque habemus, dignum atque idoneum qui honoretur, ut *vir doctus* altissimo dignitatis gradu; quare uno animo et creavimus et fecimus eum *chirurgiæ dentariæ doctorem*, eique omnia jura et privilegia quæ ad illum gradum attinent dedimus et concessimus.

In quorem fidem, has literas signo magno universitatis literariæ nostræ communiri jussimus, hoc *decimoquarto* die mensis *Octoberis* annoque Domini nostri millesimo octingentesimo *septuagesimo nono*.

JOHN BUCHANAN, M. D.
JOHN J. FULMER, M. D.
ROBT. DEBEUST, M. D.
RICHARD FORBER, M. D.
CHARLES G. POLK, M. D.
C. H. KEHNROTH, M. D.
JAMES COCHRAN, M. D.
J. K. BOWERS, M. D.

SEAL: { Eclectic Medical College and American University, Philadelphia, 1850. }

A. P. BISSELL, LL. D.
JAMES ROBINSON.

[*The diploma as given here is an exact copy of the original; the words written in the blank form are indicated by the use of italics.]

The Notary's Certificate.

I, Philip A. Cregar, a notary public for the Commonwealth of Pennsylvania residing in the city of Philadelphia, do hereby certify that the diploma hereto annexed from the "American University of Philadelphia" is the regular diploma of that Institution; that the university is a regularly incorporated institution in good standing, and that the signatures on said diploma are genuine and were acknowledged before me in due form of law.

Witness my hand and notarial seal this fourteenth day of October, A. D. 1879.

[SEAL.] PHILIP A. CREGAR,
Notary Public.

Certificate of the Prothonotary.

STATE OF PENNSYLVANIA, *County of Philadelphia.* } *ss:*

I, William B. Mann, prothonotary of the courts of common pleas of the county of Philadelphia, do hereby certify that Philip A. Cregar, esquire, by whom the annexed certificate was made, was at the time of so doing, and now is, a notary public in and for said county, duly authorized to take acknowledgments and administer oaths, &c., and that I am well acquainted with the handwriting of the said Philip A. Cregar, notary public, and verily believe the signature thereto is genuine.

In witness whereof I have hereunto set my hand and affixed the seal of the said courts this 16th day of October, 1879.

[SEAL.] WILLIAM B. MANN,
Prothonotary.

ARTICLE III.

A Course of Lectures on Operative Dental Surgery and Therapeutics.

BY W. FINLEY THOMPSON, M. D., D. D. S.

[Delivered at the National Dental College, London, 1879.]

No appliance in the operating room requires more careful attention than the dental engine, and the profession have become so wedded to its use, that it is now almost indispen-

sible to the well doing of their work. However, it is sometimes found in the worst possible condition—dilapidated, loose-jointed, and the hand piece so rusty, that an instrument can with difficulty be introduced or removed; but not alone to this is due the dread so often expressed by patients concerning it, for the frequently unskillful manner of using the engine, has also caused it to become still more unpopular. Try to keep your engine in the very best working order; the bearings well oiled, free from a gummy condition, and the flexible arm so positioned as to prevent too much play. Use no more oil on the hand piece than is absolutely necessary, for an excess will not only soil the fingers, but also the lips of the patient. Of the several engines now in use, the "White" seems to occupy a front position; the "Elliott" and "Morrison" are also well liked by many.

It is quite as important that attention be given to the instruments required, as to the engine itself, for a badly mounted disk may prevent the creditable finishing of your work. The burs and drills must be perfectly adapted to the socket, neither binding on introducing them, nor yet so loose as to give a clicking sound when pressed laterally to and fro. The revolving cylinder in the hand piece, should be carefully inspected, whether rotating smoothly and without oscillation; for if this vibratory movement occurs, the most delicate handling will not overcome the repeated rattling noise. Inspect your instruments before using, to see that none are bent, irregular in shape or roughly made, for if they do not rotate on their true centers, the hand piece will be speedily reduced to a condition of little value. After using them, they should be withdrawn from the hand piece and thrown into a receptacle, there to remain until the close of the day, then wiped with an oiled cloth, and placed in an instrument stand, ready for the coming day's operations. Attended to in this manner, they will not oxidize, and become rough upon their surfaces.

In the preparation of cavities, do not hold the instrument continuously for any length of time upon the tooth, neither

let it revolve slowly. Use the engine under full motion, directing the instrument with true precision to the portion of tooth to be operated upon; then with firm but delicate pressure, and quick alternate applications, continue the work as rapidly as possible until finished, being careful to give time between the alternations to prevent great thermal change.

Should danger exist from rapid execution, the engine ought to be displaced by the hand instrument. It is important to observe these principles when working near the pulp, as there can be no justifiable plea for exposing it in preparing the cavity; here your anatomical knowledge of the structures upon which you are working must save you from such an error.

Reviewing in detail the many individual appliances necessary for the operating room, the mallet deserves special mention. I have already spoken of it in connection with the preparation of cavities, but a more important consideration of its use is that of condensing the gold while filling. Here it becomes necessary to make a selection, there being different kinds, sizes and shapes, including the hand, electric, automatic and pneumatic mallets, all of which have their firm advocates. I certainly do not wish to disprove the value of any of them, for I have seen undoubted work produced by each; so that the question resolves itself more into the manner of their being used, than the instruments employed. Among the hand mallets are those made of lead, of wood and of steel; of the first and last metals named, I, for a long time, failed to arrive at a satisfactory decision of permanent merit, each having advantages as well as objections. The wood, owing to its lightness, producing a jarring sensation, greatly complained of; and I never feel, in using it, that the filling is properly condensed, so that it has been abandoned by me for some time. The steel gives an elastic but noisy blow, causing the patient to imagine a great deal that is never really felt. On the other hand the lead produces less noise, with an entire absence

of elasticity; and being apparently less objectionable than steel or wood, I have used it in preference to either of them.

Although dullness and inelasticity are properties so commonly associated with lead, these very seeming disqualifications may become in the hands of the dentist, a means to an end. The requisite elasticity is given by the method of holding the mallet in connection with the stroke from the hand and fingers, to be hereafter described. The dullness of the metal prevents a secondary rebound, and assures the operator that the blows are the result of actual calculation.

In advocating the mallet, I do not wish to deprecate the method of hand pressure, for in approximal cavities and upon labial surfaces, the combination of both will frequently be found to produce effective work. The mallet—whether electric, automatic, pneumatic or hand—should be most conservatively used, for if too great force is applied, or the blows unnecessarily prolonged, the gold to some extent loses its cohesiveness. Study if possible, to get an elastic blow, I mean by this, a rebound—without jar—as quickly as the instrument has been struck. The only way I have been able to obtain the nicely modulated and ever varying force required, has been by the use of the hand mallet.

This conclusion is the result of careful observation and experiment, intervening and extending over a period beyond the advent of the electric and automatic. I accord to the inventors of both these instruments, their adaptability to the condensation of gold, so far as anything in mechanics can apparently contribute; yet I can not but recognize the superiority of a blow intelligently struck, over that given mechanically. This perfect intelligence can only exist when the operator has the mallet in his own hand, for while the strokes from an assistant may approximate the requirements, it is impossible to operate with the same assurance, self-comfort and satisfaction, that would exist if the force to be employed were under individual control. The hand acting in concert with the brain, under circumstances capa-

ble of supplying the exact want, gives a "motor" that never fails to respond at the right moment, and this can only be relied upon when co-ordinated within oneself?

In the delicate manipulations rendered possible by the hand mallet, the operator may himself become subject to considerable nervous tension, in fact even to the endangerment of his health, and the relief given at such a moment by the "motor" mallet can scarcely be overstated. In the process of long-continued building, when portions of gold, aggregating to considerable cubical dimensions, are to be consolidated, the advantage of applying an easily and conveniently directed power from an extraneous source is very great indeed, and has no doubt contributed much to the advancement of dentistry considered as an art. The electric mallet is sometimes uncertain in its action, and I draw attention to this with the hope that a remedy will soon be found. In speaking of the hand mallet, a few prescribed rules regarding its use may be of service. The following are submitted for your consideration, viz:

1st.—Adaptability.

2nd.—Materials used for mallets.

3rd.—Manner of holding.

4th.—Execution.

Concerning adaptability, the size, shape, weight, form of handle, etc., should be decided upon, after which avoid any change, for the hand once schooled to any particular instrument, fails to respond in as ready a manner to any other.

Of the materials from which you may select, are lead, steel, wood, tin, rubber, etc. Of some of these, and of the different forms of mallet, I have already spoken.

The manner of holding the mallet is one of the important features connected with its use, and requires to be particularly studied. The handle should rest loosely between the thumb and index finger, assisted by the second finger, and its retention be quite independent of any other portion of the hand. With each stroke of the mallet, the handle

should come in contact with the palm of the hand before reaching the instrument, thereby partially arresting the blow, preparatory to its return. I would not have you forget that the impetus to the stroke must be given from the wrist and hand only.

There is, however, no arbitrary or stereotyepd rule by which you can be governed in the use of the hand mallet. With this, as all other instruments used in operating about the mouth, study to attain a delicacy of touch that may be perceptible to your patients, for a heavy hand in dentistry is much to be dreaded.

The instruments used in filling teeth require delicately formed points, the serrations to be shallow, but sharp and clearly defined, that each pellet of gold may be well struck, securely fastened, and thoroughly blended with its predecessor, thereby losing its individuality in perfect union; otherwise there will be a sliding, uncertain action of the instrument while condensing the gold. A few instruments well selected will answer every purpose; more than are absolutely required, only cause confusion. The principal reason for having few instruments, is, that the hand becomes schooled in their use; and this familiarity enables you to operate with greater facility. It is, however, beyond my power to dictate the requirements of your individual wants.

Extensive paraphernalia in some cases shows a mistaking of the means for the end. In one of the comic periodicals there was lately given a series of pictures representing the efforts made by an artist to improve his materials; amongst other things was a golden palette and an easel of gigantic size, made of costly wood and of gothic design. On it was the one little picture which was stationary all the while these elaborate things were being produced. The artist inquired of a friend whether there was anything further wanted. "Nothing," was the reply, "but talent." If the friend did not add "industry" also, we will supply the deficiency. Talent is a great and enviable possession in dentistry as in other pursuits, but ability, the outgrowth of

industry, eventually removes every obstruction to professional advancement.

Before dismissing the subject of instruments, I must draw your attention to those for hand pressure. These will be found of great value in the cervical walls of approximal cavities, and upon buccal margins where the cavities impinge upon the gum. Not only do the serrated ends of these differ from the last described in the angle they form with the axis of the instrument, but their proportions are much heavier, and the handles are of a shape convenient to obtain a firm and decided pressure.

In my second lecture I alluded to the necessary examination of the mouth, and also to the constitutional treatment of youth. I wish again to revert to the subjects, and to somewhat enlarge upon them. For in examining the mouth we endeavor to ascertain—

First, the density of the teeth and their fitness to receive gold as a filling.

Second, the applicability of plastic fillings to teeth not having sufficient density for gold.

Third, the proper management of children when brought for consultation.

Having so far completed our clinical examination of the mouth as to fully understand the condition of the teeth, our investigations are by no means at an end. We have to ascertain, as well as we can, the resisting power of the teeth to the destructive agencies in the mouth. Age will partly guide us in this, also the color of the caries, as well as resistance to the instrument in cutting.

Some teeth are hard and dense, and decay makes but slow progress in them; while others, deficient in the denser constituents of the tooth structure from imperfect development, becomes susceptible to every influence, whether local or constitutional. When teeth of this latter type are presented for treatment, it becomes a question of some importance to discriminate between the different materials that may be employed. Gold requires a good setting to insure

permanency, and is not compatible with teeth incapable of resisting the slightest shock. Where you meet with teeth of this character—reduced by caries to mere blue transparent shells in a few months—they must be filled with a material that can be easily applied and often renewed, and in this way they may be saved for a considerable period; but your attention will be required at frequent intervals, to inspect the work so placed.

In the mouths of children, the use of plastic materials in permanent teeth is sometimes most essential, and serves an excellent purpose in carrying them along until an advance in age shall have so solidified the teeth, as to enable your efforts to be attended with greater success in the insertion of more permanent and useful fillings. Discrimination and judgment should be so nicely balanced as to produce an equitable weighing of facts; or gold as well as other materials will be brought into disrepute. Having ascertained that the tooth structure is of a character to permit gold being employed, it becomes your duty to use it—patient permitting—in the knowledge that gold only can be used as a permanent filling. One great difference between gold and plastic fillings is, that gold is not acted upon chemically by any of the tissues or secretions of the mouth, and in turn does not act chemically upon them. Its office is to mechanically close up the cavity, and so long as the tooth structure around it shall exclude the fluids of the mouth, this answers the purpose, in advance of any other material yet discovered.

This neutrality not being so absolutely preserved by other substances, we sometimes avail ourselves of their chemical reaction in a manner favorable to tooth preservation; and especially does this apply to tin. The use of this metal, for filling teeth, is of considerable antiquity, and the chief objection to it is the lack of resistance to attrition. For mal conditioned (soft and chalky) teeth, tin has a claim upon our consideration, owing to its specific action on the walls of the cavity it fills, resulting in a hardening process

from oxidization, and from contact with them. Especially do I advocate tin for children's teeth when of this uncertain character, for I have seen the bad effects of using gold for operations of this class, and have witnessed the gradual disintegration of the tooth structure round the edges of the filling, extending far into the crucial interstices of the tooth. These teeth would be better preserved and more safely carried along to a period that would admit of gold, by the use of tin or some of the different plastic materials, and the little patient subjected to less punishment.

And now, concerning the management of children—as well as their teeth—when brought for consultation, I have to say, that you will have no class of patients more difficult to deal with. Not only is there the impatience of pain peculiar to early age, but the natural restlessness of child hood to contend with. The teeth of youth with their large pulps and imperfectly calcified dentine, are additionally susceptible of uneasiness. It is useless to attempt deception, the instrument may be concealed, fine representations made, or a cloud of delusive words used. The deception only lasts for a moment, the child is embittered against you, and becomes suspicious and even rebellious at each future occasion they are compelled to accept of your services. This prejudice stamped on the impressionable mind of the child, may unconsciously influence him in after life, and cause him to defer until the last moment, the most necessary dental operations.

The golden rule is, *never deceive.*

At this important period both parents and dentist should be in unison. Parental authority must be united with the kind, but really explanatory words of the operator. The higher feelings of the child, its fortitude and courage, must be appealed to, should the age permit. That some part of the operation will not cause pain, can be taught and demonstrated; while that part which will give pain, can be notified to the little patient, who will then nerve itself for the trial.

At no period of life do the teeth demand more attention than at the age of from six to twelve years. Parents should be taught that the teeth at this time of childhood should be examined repeatedly. In this six years the most important and peculiar changes in the mouth, take place. The deciduous teeth must not be rashly removed. Their presence, so to speak, encourages the development of the permanent teeth, and if the deciduous teeth be removed, the permanent ones may be retarded in their development, and also forced to make their appearance out of the proper arch. On the other hand, should the deciduous tooth be by any means prevented from occlusion, the obstruction may, in a similar manner, throw the permanent tooth out of line and cause disfigurement. So much of the health, happiness and sometimes the well-being in the world depends on the possession of a comely set of teeth, that no pains in regard to this should be spared.

It has been remarked that no set of organs have, in the aggregate, caused more pain than the teeth; without assenting to so sweeping an assertion, I may say that much of the pain might be averted by preventive measures. Parents should be impressed that although the deciduous teeth are ultimately to be replaced, yet some six years or more are required to complete the process, and that caries should be looked for and carefully guarded against in these teeth. The consequence of this would be the prevention of much pain to the little one, while nights of unbroken and ever needful sleep, now lost to child, parents and nurse, would be saved. Teeth ravaged by caries, or injured by unwonted applications, and by the untoward and irrepressible actions of childhood, with swollen and inflamed gums, give rise to considerable constitutional disturbances, and a lowness of condition favorable to the approach of serious diseases; or to reducing the powers of resistance should the diseases incidental to childhood, make their appearance.

The first appearance of the permanent teeth has always, to my mind, been deeply interesting; but not unfrequently

they are a cause of anxious thought to parents, for at the moment of eruption, or as soon as the crown can be seen, we find that the seal of destruction—in many cases—has been set upon them. Especially is this the case with the six year old molars. For we see manifestations of disintegration, lines of imperfect development, the enamel and the dentine dis-united, and in fact find evidence showing us that the early loss of the tooth may be predicted.

The cause of this imperfect development is invariably constitutional; and it is in measures taken to fortify the general health and to aid in the nutrition of the body that a remedy for this distressing state of things, may be found. I am aware that these remarks belong to the therapeutical part of my lectures, and I shall have to recur to this again when I reach that part of the series; but I feel that this section would be incomplete were I not to mention the prophylactic measures necessary.

The ensurement of a general state of good health is of course a *sine qua non*, and the general measures taken with that view, do not enter within the scope of these lectures, but the development of the teeth is greatly aided by appropriate diet. In the preparation of flour from wheat, some of its most important constituents are eliminated, especially those which contain the greater part of the lime salts. This loss of material has been pointed out over and over again by physicians, as a loss to the nation. The diet of children should be guided with a special regard to the introduction of lime salts, so as to convey provision for the bony structures of the body—and amongst the supplicants for this pabulum are the teeth. Oatmeal, the coarser cereals, bread made of whole flour, brown bread and milk with lime water should enter largely into the dietary table of infancy, childhood and early youth. With insufficient nutrition, with defective assimilation, or with food improperly selected, rachitis, and kindred disorders are engendered in the frame, and the effect of each arrest of development painfully manifested in the teeth. As civilization advances,

so will the necessity for the *mens sana in corpore sano* become more evident to the enlightened mind; and that the health and symmetry which is in the savage state and functional activity may have been ensured by the "survival of the fittest," will be aimed at by physiological and hygienic methods, while the aid of the specialist will be increasingly demanded.—*Monthly Review Dental Surgery.*

ARTICLE IV.

Mechanical Dentistry.

BY DR. EDGAR D. SWAIN.

The subject of Mechanical Dentistry, though occupying a back seat in the profession, is not entirely devoid of interest; and although minor improvements are being continually made and brought before the profession, they fail to elicit that interest which attaches to anything new in the so-called operative branch of our profession.

To be able to put six blocks of porcelain teeth upon a base of rubber or celluloid fully satisfies the average practitioner, and with the present indefinite ideas as to where the line of demarcation between the mechanical and operative branches should be drawn, it really seems strange that we have a division at all. With more experience and more intimate acquaintance with the duties devolving upon the practitioner of dentistry, I am inclined to the opinion that were the mechanics taken out of the science of dentistry, little would be left to the gentlemen who so loftily ignore the title of Mechanical Dentist.

To prepare the cavity of decay in a tooth for the reception of a filling of gold or other material may be operative or surgical, but with the packing of the first piece of filling again commences the mechanical; therefore, there is left to the operative or surgeon dentist the preparation of the cavity to receive the filling, and the treatment of the few diseased conditions of the soft tissues of the oral cavity which accidentally fall into our hands, as with the surgeon, whose

duty, as such, ends with the dressing of the stump of the amputated limb, when the mechanic is called to provide the substitute.

The slaughter of the innocents, we are daily reminded, continues where the free use of gas prevails; and the yawning pocket of the *surgeon* dentist is always open to receive one dollar per tooth for extracting, and eight dollars, or less even, to supply the substitute which has been made necessary, through the incompetency of himself as a surgeon dentist. Having filled the teeth repeatedly, and with each failure assuring the suffering patient that her teeth "do decay away from the fillings so," the unfortunate, tired with both the expenditure of money and time, backed by the assurances of the "surgeon dentist," as blandly expressed as the innocence of the "Heathen Chinee," that the only thing left is the extraction of the ruined members, and the securing of one of his unequaled substitutes therefor; and from that time no more filling, no more pain, no more expense.

Since I last addressed this Society upon this subject, there have appeared several quite important improvements in this branch of our profession; and I think that, with the generally increasing intelligence of our brethren in the profession, there is a growing tendency to save or utilize partially decayed teeth and the fangs of all the teeth, even though the operations be not of the character properly denominated operative, or the building of contour fillings, but by placing upon them artificial crowns of either gold or porcelain. It is evident, from the numerous improvements upon old methods, and inventions of new, that our thinking men and inventors are giving more thought to this branch of our work than in former years, and that the results thus far warrant continued exertions.

Of these improvements or inventions I shall speak but briefly, and with the hope of increasing the interest of those present in this direction.

First, I will call attention to the methods of Dr. Richmond, of San Francisco, and Dr. Hale, of St. Louis, for

constructing and setting gold crowns upon the fangs of the bicuspids and molar teeth—methods which, to my mind, are to mechanical dentistry what the rubber dam was to operative. Either of these methods contemplates the manufacture of the artificial crown out of the mouth and in the laboratory, except so much fitting as may be necessary to the fang they are to be worn upon.

The Richmond method is the most simple and easy of the two, and except in the artistic imitation of the form devised and used by the Creator, answers equally well the purpose.

The first part of the operation must be classed under the head of Dental Surgery or Medicine, as it consists in the curing of any diseased conditions which may exist in the soft tissues enveloping the fang, as formed abscess, ulceration, periostitis, etc. This accomplished, a band or tube of coin gold is, with the plate benders, pliers, or other convenient manner, fitted to the fang so closely as, when soldered, to require considerable force to send it to its place; this tube to extend below the margin of the gums, in some cases as far as the edge of the process, and as high as the contemplated crown. The metal being soft, it will be found to adapt itself readily to the tooth or fang to be fitted. This tube or barrel forms the sides of the crown, and when fitted should be cut a little shorter than the required length contemplated, then upon the end solder a disk of same material. Then melting down some of the clippings from the plate used, into beads, these to be slightly flattened under a hammer, so as not to roll about, are soldered upon the disk and filed into cusps, two to be used for a bicuspid tooth, and four, more or less, for a molar. The æsthetic taste of the operator will, of course, settle the question as to the finish. We now have a gold shell shaped more or less like the crown of a tooth. The solder used is very fine, and so alloyed as to retain the color of the coin gold, consequently no unsightly seems are seen in the finished work. Frequently these shells are placed over enough of the crown of the natural tooth to retain them firmly without the aid of screws; but this being

entirely gone, screws of nickel or gold may be set in the root. Fill the shell with oxy-chloride of zinc, and force home to its place, and we have an artificial crown, without subjecting our patient to the all day's torture of packing enough gold foil to have built it up, and firmer and more durable than possible to make with the old method. The fine mechanical ingenuity, close workmanship of the operator, with nicety of adaptation, all add to the success of the operation.

Dr. Hale's method differs not in the result so much as in the manner of arriving at it. First, cast-iron dies are procured of the grinding surfaces of bicuspids and molars, and that part of the crown is swedged into a disk sufficiently large to form the crown contemplated, then V shaped notches are cut out, allowing the sides to be brought down, forming the sides when completed. This crown is drilled at some convenient place to allow the packing of amalgam, to retain it in place, screws having previously been set, about which the amalgam is to be packed. This, when completed, makes a very durable as well as artistic piece of work.

Both of these methods provide for the facing of the crown with porcelain, whenever desirable to hide the gold, as often is the case with bicuspids, by simply sawing out enough of the outer portion of the gold crown to allow a plate tooth to be secured there. This I have done in several cases with results highly satisfactory to the wearer.

The Richmond process also provides for the setting of pivot teeth upon fangs of the six anterior teeth, so constructed as to prevent the splitting of the fang. The process for accomplishing this is so complicated that I will not attempt to make it clear in an essay of this character. I will, however, say that I have not been entirely successful with this work, and acknowledge the fault to be in a measure owing to imperfect manipulation.

In regard to the use of oxy-chloride of zinc for securing the gold crowns in place, I desire to caution all that they

be very particular to remove every vestige of it from about the neck of the tooth, going with properly shaped instruments under the free margin of the gum, also wash out repeatedly with water, or, what is better, bicarbonate of soda and water. Unless this is thoroughly done the parts will slough away, leaving an unsightly operation, as well as removing the valve formed by the gingival margin to keep the secretions from penetrating to the oxy-chloride inside the shell. I met with this experience in one case, and have since been cautioned by Dr. Richmond himself, who had experienced the same trouble.

Next I desire to call your attention to some improvements made by Dr. Holbrook, of Waukesha, Wis., consisting in changes made in the impressions and plaster casts, so as to secure results which every mechanical dentist has long felt the need of. It does away entirely with the usual form of vacuum cavity so long in use, securing a much better adaptation, and largely, if not entirely, avoiding the liability of rubber and celluloid plates to rock, as we express it, and decreasing very largely the liability to break through the mesial line of the plate, also securing to the lower plate a very good adherence from atmospheric pressure or suction. This is accomplished without the use of soft rubber edges, flanges, or any of those devices which have heretofore been tried and found wanting.

The improvements work equally well with all kinds of work, metal or plastic, and I feel confident that their adoption by those who manufacture the porcelain work would assist very materially in overcoming some of the greatest difficulties they have to contend with. The process through which these results are accomplished I am debarred from giving you by letters patent.

And, now, one more secret and I am through. All hear more or less complaint from patients wearing rubber plates, of a burning sensation, feverish, and often congestion of the parts under the plate. A small piece of sulphate of zinc, anywhere in the neighborhood of ten grains, dissolved

in a large spoonful of vinegar, and washing the plate thoroughly with the preparation, has frequently resulted in the complete cure of very aggravated cases. This may not be a specific, but its use has been so satisfactory that I felt it worth giving to the profession; and if others give to their patients the same amount of relief which several of mine have received, your money and time spent in attending this session of our Association will not have been entirely wasted.—*Transactions of Illinois State Dental Society.*

ARTICLE V.

Tooth-Caries of Pregnancy—Its Cause and Treatment.

BY EDWARD C. KIRK, D. D. S., PHILADELPHIA.

It is a well-known fact that during pregnancy women are often subject to more or less annoyance and discomfort from their teeth. This disturbance may vary in degree, from a slight uneasiness—a mere consciousness on the part of the individual of the presence of teeth in her mouth—to the severest form of odontalgia, involving several teeth. The frequent occurrence of rapid and extensive destruction of tooth-structure during pregnancy is so well recognized that it would be useless to multiply examples; one case will serve to illustrate. Mrs. J. presented herself for examination of her teeth. She gave the following history. Up to the time of her marriage the teeth had been of good quality, rarely requiring the services of a dentist. During the three years following marriage she gave birth to two children; she also suffered much from toothache, and had two of her teeth extracted. After the birth of her second child she placed herself under the care of a dentist in a neighboring city, who put her mouth in order; he being a thorough and conscientious operator, the work was well done.

Again she became pregnant, suffering as before with her teeth; some of the fillings dropped out, and a number of

new cavities appeared. It was after the birth of this her third child that she came under my charge. On examination, I found the teeth very sensitive, and so soft that they could be cut away almost like chalk. The decayed portions were of that peculiar cartilaginous character which indicates a loss of the mineral portions of the tooth. I filled, in all, seventeen cavities, some large, others small, and extracted the root of one tooth too far gone to be of service in sustaining an artificial crown.

This case is a typical one, and illustrates well a class of cases that call for a large share of the dentist's attention. In those cases where women have borne children rapidly, it is the common story that up to the time of marriage the teeth were of good quality and gave but little trouble, but since have rapidly failed.

As to the cause of this degeneration of tooth-structure during pregnancy, there is little reason to doubt the accepted explanation that an excessive demand is made upon the system of the mother for the lime-salts necessary to the formation of the osseous structures of the fœtus, and the teeth of the mother suffer, along with her osseous system, in meeting this demand when the supply of lime-salts is not sufficiently kept up in the mother's food.

We believe that much can be done to avert this wholesale destruction of the teeth, the loss of which entails so much disfigurement and physical suffering. If the cause be as stated, then to supply food rich in lime combinations is the rational indication. But most of the food brought to our tables is not rich in bone-forming material, and it may be that even a liberal supply of lime-containing food would not meet the urgent demands made during pregnancy upon a system already poor in lime-salts; certainly the judicious use of some of the soluble preparations of lime, such as the lactophosphate or hypophosphate, would be of benefit in such a case, not only in maintaining the lime standard of the mother, but also in insuring to the fœtus a well-developed osseous and dental organization. We have

every reason to believe that rickets is due to lime-starvation on the part of the mother and child; and evidence is not wanting to show that certain malformations of the jaws, and consequent irregularities of the teeth, are in a measure due to the lack of sufficient bone-forming material during fœtal development.

A fact in this connection which I have had occasion to observe more than once is that in a large number of pregnant women the morbid craving, so called, for unusual articles of food—which is so often present and may occasion great annoyance to both patient and physician—is for articles of a mineral character, as chalk, slate-pencils, lime, plater, whiting, etc.

Two cases in particular have come under my notice. In the first case the woman would mix a saucerful of whiting and water, which she kept near her during the day, and would eat large quantities of it with evident relish.

In the other case the lady stated that during her pregnancies her desire for lime was so great that she would almost have to run past a mortar bed in the street lest the desire to stop and eat portions of it should overcome her. When at home, she would pick particles of plaster and whitewash from the wall and eat them greedily.

It seems reasonable to believe that this craving is nothing more than nature's method of expressing the need for lime-salts when, from pregnancy or other causes, the supply is not equal to the demand and the system is poor in lime as a consequence. I say from other causes; for what else is it that will make a rapidly-growing, overworked school-girl chew her slate-pencils and lead-pencils with such apparent relish?

If all this be true, then the treatment before indicated of supplying to the system all the lime it needs, either by properly selected food, or, if occasion demands it, by the administration of a sufficient quantity of some soluble preparation of lime, ought to do much towards averting the destruction of the teeth by caries during pregnancy, and

relieve the distressing cravings for unusual kinds of food incident to that period. As having bearing upon the subject and showing that an increased amount of lime is demanded by the system during pregnancy, I may cite the fondness which birds and fowls generally have for lime, oyster shells, plaster, etc., during the egg-laying period. Another point which I have noted is that this fondness for lime is displayed on the part of the female more than on that of the male; hens will quarrel for the possession of an empty egg-shell, and the cock will look on without interest while they devour it greedily.

The effect of an insufficient supply of lime is seen sometimes in the case of caged birds, as canaries. If they are not supplied with cuttle-fish bone during the breeding-season, the eggs will be laid without shells, or with shells so thin that they will not withstand the slightest touch. This same result takes place with hens that are cooped for a length of time and are not supplied with a proper quantity of lime-containing food. Is not the desire for lime shown by these animals analogous to the craving so often exhibited by pregnant women for like substances? It is true the craving does not in every instance take the form of a desire for lime; but nevertheless it is probably only an expression of the same need lacking proper direction.

The system makes demands for what it needs in a way there is no mistaking. At times we crave acids, and we indulge freely in pickles, acid fruits, etc. At other times sugar or salt is needed, and we eat accordingly.

This is further illustrated by the long pilgrimages made by the buffaloes and antelopes of our Western territory to the salt-licks, in order to satisfy their instinctive demands for salt.

The rapid destruction of teeth during pregnancy, and the therapeutic measures suggested by the so called morbid cravings, are of equal importance to physician and dentist.

To secure for the overtaxed child-bearing woman immunity from much pain, nervous distress, imperfect mastication,

and impaired digestion, by the preservation of her teeth, cannot be considered as a trivial matter.

As the sphere of the dentist to day is limited in a great measure to the repair of injuries already sustained by the teeth, we must look to the members of the medical profession to aid us in answering the question. How much in the way of preventing the decay and loss of the teeth from pregnancy can be accomplished by supplying to the system all the lime it needs during the gestative period?—*Phila. Med. Times.*

ARTICLE VI.

Poisons and their Antidotes.

Dr. Th. Schlosser has published in the *Zeit. des Allg. Œsterreich. Apoth. Ver.* the following table of antidotes for the convenience of pharmaceutists, thus avoiding the necessity of consulting books.

It is premised that the first thing to be done is to cause the patient to vomit: if he has already vomited there is no need to give him the emetic.

Aconitia. Give an emetic composed of sulphate of copper, 15 grains, in 10 fluid drachms of water. Half to be taken at once, and if necessary after five minutes, the remainder is to be administered.

Then the following:—Tannic acid, 1 drachm. Water, 6 fl. ounces. Simple syrup, 1½ fl. ounces. Dose, a tablespoonful every five minutes.

Ether. Give the following in one dose:—Ammonia, 15 drops. Water, 5 fl. drachms. Then let the patient smell ammonia, apply the cold douche, and let in fresh air.

Caustic Alkalies and their Carbonates.—Tartaric acid, 2½ drachms. Water, 1 quart. Take a tumblerful at once, then every five minutes a teaspoonful of sweet oil and five teaspoonfuls of the tartaric acid solution.

Caustic Lime and Lime Salts.—Epsom salts, 5 drachms. Water, 3 ounces. Simple syrup, 1½ fl. ounces. Take at

once. Then take, every fifteen minutes, two teaspoonfuls of the following: Oil of sweet almonds, 5 fl. drachms. To make an emulsion measuring three fluid ounces.

Alcohol. (Drunkenness.)—1. Pepsine, ½ drachm. Water, 6 ounces. Hydrochloric acid, 20 drops. A tablespoonful every five minutes, or, 2.—Ammonia, 10 drops. Water, 5 ounces. Simple syrup, ½ fl. ounce. Take at once.

Ammonia.—1. Concentrated acetic acid to smell, or, 2.—Vinegar, 5 fl. drachms. Water, 6 ounces. Simple syrup, ½ fl. ounce. A tablespoonful every five minutes, or, 3.—Vinegar, 1½ fl. ounces. Water, 6 ounces. Inhale hot. Cold water to wash.

Anilin colors.—Sulphate of copper, 15 grains. Water, 10 fl. drachms. Give one-half at once; then, if necessary, after five minutes the remainder. Then: Calcined magnesia with sufficient water to make six fluid ounces of milk of magnesia. Every half-hour a tablespoonful.

Antimoniates and Tartar Emetic.—Tannic acid, 45 grains. Water, 4½ fl. ounces. Simple syrup, 2 fl. ounces. A teaspoonful every five minutes.

Arseniates.—Milk of calcined magnesia made as above. Half a tumblerful at once, and every five minutes a tablespoonful.

Atropia.—1. Jaborandi leaves, 2½ drachms. Make an infusion of 6 ounces. Take one-half at once, then every half hour a tablespoonful with a tablespoonful of wine, or, 2. Muriate of pilocarpia, ¾ grain. Water, ½ fl. drachm. For subcutaneous injection.

Baryta.—The same as *Lead Salts.*

Belladonna.—The same as *Atropia.*

Bites from Dogs and Cats.—Caustic potassa, 15 grains. Water, 1 pint. Wash out the wound, and keep linen moistened with it on the wound until the physician comes.

Bites from Snakes.—The same as above, or, Ammonia, 30 drops. Water, 4½ fl. ounces. Simple syrup, 1 fl. ounce. A tablespoonful every five minutes.

Lead Salts.—Fluid extract of senna, 1 fl. ounce. Epsom salts, 1 ounce. Warm water, ½ pint. Take in two portions at ten minutes interval.

Bromine.—Calcined magnesia and sufficient water to make six fluid ounces. Half a tumbler at once, then a tablespoonful every fifteen minutes.

Brucia.—The same as *Strychnia.*

Cannabis Indica.—The same as *Morphia.*

Cantharidia.—Sulphate of copper, 12 grains. Water, 10 fl. drachms. Half at once; the remainder, if necessary, in five minutes. Then: Powdered camphor, 45 grains. Syrup of acacia, 8 fl. ounces. Laudanum, 10 drops. Suspend the camphor well in the syrup, and add the laudanum. Dose, a tablespoonful every five or ten minutes.

Carbolic Acid.—Give an emetic of sulphate of copper; then milk of calcined magnesia and water, six fluid ounces. Half at once, and afterwards a tablespoonful every fifteen minutes, alternating with a tablespoonful of the oily emulsion mentioned above.

Chloral Hydrate.—1. Sulphate of atropia, 1–30 grain. Water, 10 fl. drachms. In two portions, with half an hour between, or, 2.—Tincture of belladonna, 10 fl. drachms. Give in the same way.

Codeia.—The same as *Morphia.*

Colchicia.—The same as *Aconitia.*

Chloroform.—Give ammonia to smell, then apply the cold douche and ice on the head. Then give one or two seidlitz powders, and in extreme cases the usual emetic of sulphate of copper.

Chlorine.—Bitter almond water, (German Pharm.) 2½ fl. drachms. Ether, 1 fl. ounce. Alcohol, 1 fl. ounce. To smell and inhale. Then: Sweet spirits of nitre, 5 fl. drachms. Syrup of acacia, 10 fl. drachms. Water, 10 fl. drachms. A tablespoonful every five or ten minutes.

Chromic Acid and Chromates.—Powdered iron, 75 grains. Oily emulsion, 1½ ounces. Mucilage, 1½ ounces. Shake

well. One teaspoonful every five minutes, then two tablespoonfuls of water.

Sulphuretted Hydrogen and Foul Air.—Hoffmann's anodyne, 1 fl. ounce. Ten drops every five minutes in a teaspoonful of water. Then: Sweet spirits of nitre, 1½ fl. ounces. Pour it on a cloth and let the patient inhale it, or give chlorinated lime to smell; supply fresh air and wash the face with vinegar.

Conia.—Nitrate of strychnia, 1–6 grain. Water, 3 ounces. Laudanum, 30 drops. Two teaspoonfuls every fifteen minutes until one third has been used, then every half hour till one-third is left, then the same dose every hour.

Curare.—Nitrate of strychnia, ¾ grain. Water, 1¼ fl. drachms. For subcutaneous injection.

Hydrocyanic Acid—Sulphate of copper, 1–2 drachm. Water, 1 fl. ounce. Half at once, and the remainder after five minutes. Apply the cold douche.

Digitalis.—The same as *Morphia.*

Poisonous Mushrooms.—The same as *Chloral Hydrate*, or, Sulphate of atropia, 1–6 grain. Water, 1¼ fl. drachms. For subcutaneous injection.

Hellebore.—The same as *Aconitia.*

Hyoscyamus.—The same as *Morphia.*

Insect Bites.—Apply ammonia to the bite.

Iodine—Starch, 2 drachms. Water to make 5 fl. ounces. Boil, and add Milk of calcined magnesia, 5 fl. ounces. A tablespoonful every five minutes.

Oxalic Acid and Oxalates.—Precipitated chalk, 1 1–2 ounces. Water, 6 fl. ounces. Half at once, then a tablespoonful every ten minutes. Then, after half an hour: Fluid extract of senna, 1 fl. ounce. Sulphate of soda, 2 1–2 drachms. Water enough to make 2 fl. ounces. Take at once.

Carbonic Acid and Carbonic Oxide.—Give ammonia to smell, and apply the cold douche. Then: Fluid extract of

ergot, 1 fl. drachm. Water, 2 fl. ounces, A teaspoonful every fifteen minutes.

Creasote.—Oily emulsion, half pint. Take one-quarter at once, then half a teacupful every ten minutes.

Swallowing of a Copper Coin.—Fluid extract of senna, 1 fl. ounce. Water, 1 fl. ounce. Sulphate of soda, 2 1–2 drachms. Take at once. This dose is for an adult. Children in proportion.

NASHVILLE, March 4, 1880.

The Dental Department of Vanderbilt University held its First Commencement Exercises in the Chapel of the University on Wednesday Evening, February 25th.

The Dean, D. W. H. Morgan, reported fifteen matriculates, of which number the following five were entitled to the degree of Doctor of Dental Surgery:

A. T. Kline, D. L. B. Blakemore, T. E. Gabamiss, R. B. Lees, M. D., J. H. Webber, of Tennessee.

The address on the part of the Faculty was delivered by Prof. D. R. Stubblefield, and the valedictory by D. L. B. Blakemore.

Messrs. Herman & Morrison Bros, of Tennessee Dental Depot offered two prizes, one for the best qualified second course student, and one for the first course student most proficient in all branches taught in the school. A. T. Kline received the first, an S. S. White engine, and Mr. J. P. Bailey the second a Whitney vulcanizer.

The first prize for the best gold fillings made in the Infirmary, offered by D. Henry W. Morgan, was won by D. L. B. Blakemore. L. G. Anderson, a first course student, received the second, a copy of Tyson's Celebrated Doctrine.

B. R. FREEMAN, *Sec'y.*

Georgia State Dental Society.

The Twelfth Annual Session of the Georgia State Dental Society will be held in the City of Atlanta, commencing on Tuesday the 11th day of May, 1880, at 10 A. M.

L. D. CARPENTER, *Cor. Sec'y*

EDITORIAL, ETC.

Law Regulating the Practice of Dentistry in Georgia.—An act to regulate the practice of dentistry, and to protect the people against empiricism in relation thereto, in the State of Georgia.

SECTION 1.—*Be it enacted by the General Assembly,* That from and after the passage of this Act it shall be unlawful for any person to engage in the practice of dentistry in the State of Georgia, unless said person has graduated and received a diploma from the Faculty of a Dental College, chartered under the authority of some one of the United States or foreign governments, or shall have obtained a license from a Board of Dentists, duly authorized and appointed by this act to issue such license.

SEC. 2.—That the Board of Examiners shall consist of five (5) dental graduates or practitioners of dentistry, who are members in good standing of the Georgia State Dental Society; provided, that said graduates or practitioners have been practicing in the State of Georgia for a term of not less than three (3) years. Said Board shall be elected to serve for two years. The President of said Georgia State Dental Society shall have power to fill all vacancies in said Board for unexpired terms.

SEC. 3.—That it shall be the duty of this Board, first, to meet annually at the time of meeting of the Georgia State Dental Society, or oftener, at the call of any three of the members of said Board. Thirty days notice must be given of the annual meetings. Secondly, to prescribe a course of reading for those who study dentistry under private instructions. Thirdly, to grant a license to any applicant who shall furnish satisfactory evidence of having graduated and received a diploma from any incorporated dental college, without fee, charge or examination. Fourthly, to grant license to all other applicants who undergo a satisfactory examination. Fifthly, to keep a book, in which shall be registered the names of all persons licensed to practice dentistry in the State of Georgia.

SEC. 4.—That the books so kept shall be a book of record, and a transcript from it, certified to by the officer who has it in keeping, with the common seal, shall be evidence in any court in the State.

SEC. 5.—That three members of said Board shall constitute a quorum for the transaction of business, and should a quorum

not be present on the day appointed for their meeting, those present may adjourn from day to day until a quorum is present.

SEC. 6.—That one member of said Board may grant a license to an applicant to practice until the next regular meeting of the Board, when he shall report the fact, at which time the temporary license shall expire, but such temporary licenses shall not be granted by a member of the Board after the Board has rejected the applicant.

SEC. 7.—That any person who shall, in violation or this Act, practice dentistry in the State of Georgia for a fee or reward, shall be liable to indictment, and on conviction, shall be fined not less than fifty nor more than three hundred dollars; provided, that nothing in this act shall be construed to prevent any person from extracting teeth: and provided further, that none of the provisions of this Act shall apply to regular licensed physicians and surgeons.

SEC. 8.—That on trial of such indictment, it shall be incumbent on the defendant to show that he has authority, under the law, to practice dentistry, to exempt himself from such penalty.

SEC. 9.—That one-half of all fines collected shall inure to the informer, and the other half to the educational fund of the county.

SEC. 10.—That dentists who have been in practice prior to the passage of this Act, are exempt from all provisions of the same.

SEC. 11.—Repeals conflicting laws.

Approved August 24, 1872. [See Code of Georgia, §1416.]

An Act to amend Section 1416 of the Code of Georgia relating to and regulating the Practice of Dentistry in the State of Georgia, and to require Practicing Dentists to register.

SECTION 1.—*Be it enacted by the General Assembly*, That section 1416 of the Code of Georgia be so amended as to read as follows: "That any person who shall, in violation of this Act, practice dentistry in the State of Georgia for a fee or reward shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished as prescribed in section 4310 of the Code of 1873; provided, that nothing in this act shall be construed to prevent any person from extracting teeth; and provided further, that none of the provisions of this Act shall apply to regular licensed physicians and surgeons in practice at or prior to the passage of this Act, and dentists who were in practice prior to the 24th of August, 1872."

SEC. 2.—Every person practicing dentistry in this State shall, within sixty days after the passage of this Act, register his name, together with his post-office and the date of his diploma

or license, in the office of the Clerk of the Superior Court of the county in which he practices, and shall, on the payment to such Clerk of a fee of fifty cents, be entitled to receive from him a certificate of such registration.

SEC. 3.—That all laws and parts of laws in conflict with this Act be, and the same are hereby repealed.

Approved October 20, 1879.

BIBLIOGRAPHICAL.

A Treatise on Oral Deformities as a Branch of Mechanical Surgery. By Norman W. Kingsley, D. D. S. Publishers: D. Appleton & Co., New York, 1880.

The author is well known to the dental profession as an authority on such subjects as are treated of in this work, which consists of a handsome volume of nearly six hundred pages, illustrated by over three hundred and fifty engravings.

The subject of "Irregularity of the Teeth" is first noticed, with a full and comprehensive explanation of how such conditions may be remedied and the appliances necessary to be constructed. The article on "Palatine Defects" relating to cleft palate, and hare-lip, is an admirable one and contains much that is useful to the practitioner. "Mechanism of Speech" and "The Æsthetics of Dentistry" reveal the art-knowledge of the author, and the necessity existing for the dental practitioner to become informed concerning the established results of the many experiments made by the author of this treatise. The importance of restoring the natural *expression* is recognized by everyone concerned in the manufacture of artificial substitutes, and requires a proper knowledge and use of the laws which define the difference between an art and mere mechanical skill.

Sir Charles Bell's, and the late Prof. McQuillen's views are adopted as authority, and the author is governed by the laws found in the former's "Anatomy of Expression" for his practice, and for securing the artistic realization of the harmony of the features. This new work is well worthy of its author and furnishes an important addition to the literature of the dental profession.

Headaches; Their Nature, Cause and Treatment. By William Henry Day, M. D., Member R. C. P., London, Etc., Etc. Third Edition with Illustrations. Publishers: Lindsay & Blackiston, Philadelphia, 1880.

A useful manual in which the whole class of headaches is carefully and intelligently treated under special divisions, the nature, origin and treatment of each being clearly described. Headaches in childhood and youth are minutely noticed, and excellent directions given for the observance of parents and teachers in their management of children, all of which greatly add to the value of this treatise. The peculiarities of the cerebral circulation, and the relationship existing between the nerves and blood-vessels are clearly defined in order that nervous pain may be fairly comprehended. Accompanying the treatment are many useful formulæ, which, with the views advanced, are the results of notes and observations recorded by the author during a professional experience of many years.

This work cannot fail to impart useful information and prove an important adjunct to general medical practice.

Brain Work and Overwork. By Dr. H. C. Wood, Clinical Professor of Nervous Diseases University of Pennsylvania, Etc. Publisher: Presley Blackiston, 1012 Walnut Street, Philadelphia, 1880.

This manual is another of the series known as "American Health Primers," which have passed into the hands of the new Publisher above named, and, like its predecessors, contains much that is instructive and interesting. The introduction relates to the supposed increase of nervous affections, the author contending that the popular belief in such an increase rests only upon the superiority of modern diagnosis, we recognizing them more clearly than did our fathers. The general causes of nervous trouble are then discussed, such as exposure, sexual excesses, alcohol, tea and coffee, and gluttony. The effects of emotional and intellectual work, difference in labor power of sexes, and woman's work, proper time of work, variety of work, rest in recreation, and rest in sleep, are some of the many divisions of the subject skillfully treated by the author. Concluding with "signs of nervous breakdown."

The publishers of this series of "Health Primers" have been very successful in introducing such subjects as interest all

classes, as the contents show, and also in securing authors competent for the work.

Sore Throat; Its Nature, Varieties and Treatment; Including the Connections between Affections of the Throat and other Diseases. By Prosser James, M. D., Lecturer on Materia Medica and Therapeutics at the London Hospital, and Physician to Hospital for Diseases of Throat and Chest, Etc., Etc. Publishers: Lindsay & Blackiston, Philadelphia, 1880.

The present publication is the fourth edition of a very useful treatise which is illustrated by handsomely executed hand-colored plates. Commencing with the anatomy of the Throat, all the different varieties of Sore Throat are minutely described with their diagnosis and treatment. Part II relates to different affections, among which are such mouth affections as Apthæ, Thrush, Stomacace, Gangrene of Mouth and Noma. Croup and Diphtheria receive due notice. Part III relates to diseases of Individual Organs, as affections of the Soft Palate and Uvula, also of the Tonsils, Pharynx, Nose, Ears, Æsophagus, Larynx, Voice, Trachea and Bronchi, the whole composing a very useful and carefully prepared work.

Petermann's Dental Almanac for 1880. Frankfort, Germany.

Another year's issue of this useful publication has been received. It contains an excellent portrait of the late Dr. Hermann Rottenstein, of Frankfort, who died August 18, 1879.

The annual publication of this small work is an honor to its author, and of great service to the profession in Europe. It is doing all that is possible against the sale of bogus diplomas prepared by an illegal institution in Philadelphia, and we trust that Dr. Petermann may not only succeed in his object, but that his efforts may be properly recognized by the regular members of the dental profession in Europe.

Our Homes. By Henry Hartshorne, A. M., M. D., formerly Professor of Hygiene in University of Pennsylvania, is another of the American Health Primers, published by Presley Blackiston, 1012 Walnut Street, Philadelphia, 1880.

It relates to the manner in which we should live, and thus escape abridging our lives and multiplying the "ills that flesh

is heir to." by discussing the question "How shall we have Healthy Homes? The work commences with "Situation," and treats of "Construction," "Light," "Warmth," "Ventilation," "Water Supply," "Drainage," "Disinfection," "Population," and "Workingmen's Homes," the author contending that "we live too far from nature." The articles on ventilation and drainage are worthy of the attention of all housekeepers, and the treatise is in every respect a useful and interesting one, not surpassed by any of the series which have preceded it.

MONTHLY SUMMARY.

Chloral as an Anæsthetic for Children.—M. Redier, in *Jour. des Sciences Medic. de Lille*, says that chloral, in sufficiently large doses, always produces in children a profound sleep approaching to anæsthesia.

In incomplete anæsthesia from chloroform, the patient feels the pain, and manifests his sensations by cries, as in anæsthesia from chloral; but, while in the first case memory is preserved, in the latter all recollection of what was done is lost, which is of advantage in the case of children.

Chloral given in large doses to the latter (2–4 grammes) gives rise to no trouble. In the only fatal case recorded, 5 grammes was given to a child less than three years old. The necessary doses for anæsthesia are: From 2 to 4 years, 2 grammes; from 4 to 8, 3 grammes; from 8 to 12, 4 grammes. It should be given in one does, while fasting.

Sleep comes on very quickly. The operation should be performed about an hour or an hour and a half after the child has fallen to sleep. Five hours is the usual duration of the sleep, during which the respiration and the circulation preserve very nearly the normal type.

This method of anæsthesia can be advantageously employed for the extraction of teeth, destruction of nævi, application of caustics, opening of abscesses, and for long and painful dressings, as of extensive burns.—*Druggists' Circular.*

Death from Chloroform in a Dentist's Chair.—It is our painful duty to record another death from chloroform in a dentist's chair. The patient was a young man, 21 years of age, and the

place where the accident occurred was St. Johnsbury, Vt. No details are given—simply that death was the result of the administration of chloroform. To most physicians such a statement is enough to bring to mind the usual relations of cause and effect in these cases, and to emphasize a growing conviction that this dangerous anæsthetic should be banished from the dental operating-room. In view of the number of deaths from chloroform during dental operations, and the usual distressing circumstances which attend them, it is indeed surprising that any dentist should, even under the most extraordinary circumstances, run any risks with his patient. We are not prepared to say that the dentist did not use all the ordinary precautions in inducing anæsthesia. Probably he did. But he used treacherous chloroform as the agent, and for this he is certainly in the highest degree culpable.—*Med. Record.*

The Effects of Tobacco.—Dr. C. R. Drysdale writes:

My own experience of the evil effects of great tobacco smoking and chewing, is that these are among the most prevalent causes of chronic disease in the male sex. Of course, I do not mean for one moment to compare the dangers caused by the use of tobacco with those we are so familiar with at the bedside, in cases of diseases caused by alcohol. Tobacco does not cause cirrhosis of the liver, nor disease of the lungs and heart, in the same way, or with the same frequency as chronic tippling does. But there are, nevertheless, several well marked diseases caused by the taking in of nicotine into the blood, whether through the absorbents of the mouth in smoking, or, more rapidly, in the case of chewing. First of all, the digestive organs are often greatly impaired by the use of nicotianæ tabacum. The teeth are frequently blackened, and the gums swollen in great smokers and chewers. Caries of the teeth is favored by the various acids produced by the burning of tobacco, and mingled with the saliva. Duskiness of the fauces, and relaxed sore throat, are far too prevalent among smokers, as good observers have long noticed. Dyspepsia, caused by nicotine, is so common as to be hardly worth referring to. Diarrhœa, or more frequently, constipation, is induced by the use of tobacco in many instances. And I must not omit, in passing, the remark that the *male sex* who smoke are alone, with the very rarest exceptions, the subjects of epithelioma of the lip. I once saw such a case in an old Irish woman, who was a constant pipe smoker.

With regard to the nervous system, the weakness of vision produced by nicotine is a constant trouble to youthful smokers. Mr. George Critchett has remarked that among wealthy young men weak sight is very frequently caused by their extravagant

addiction to cigars and pipes. Tobacco amaurosis, too, is far from rare. In very young men, the use of nicotine is peculiarly inimical to intellectual improvement. Thus, M. Joly found in the Polytechnic School at Paris that the non-smoking students carried off the very great majority of the prizes for Mathematics; and Dr. Kostral, physician to the State factory of tobacco, of Austria, shows how nicotine poisoning often kills the young boys of the factory, and causes abortions in the young mothers, and death of infants at the breast, through the nicotine contained in their mother's milk.—*Med. Press and Circular.*

Effects of Tea on the System.—1. With tea, as with any potent drug, there is a proper and improper dose.

2.—In moderation, tea is a mental and bodily stimulant of a most agreeable nature, followed by no harmful reaction. It produces contentment of mind, allays hunger and bodily weariness, and increases the incentive and the capacity for work.

3.—Taken immoderately, it leads to a very serious group of symptoms, such as headache vertigo, heat and flushings of body, ringing in the ears, mental dullness and confusion, tremulousness, nervousness, sleeplessness, apprehension of evil, exhaustion of mind and body, with disinclination to mental and physical exertion, increased and irregular action of the heart, increased respiration.

Each of the above symptoms is produced by tea taken in immoderate quantities, irrespective of dyspepsia, or hypochondria, or hyperæmia. The prolonged use of tea produces, additionally, symptoms of these three latter diseases. In short, in immoderate doses, tea has a most injurious effect upon the nervous system.

4.—Immoderate tea drinking, continued for a considerable time, with great certainty produces dyspepsia.

5.—The immediate mental symptoms produced by tea are not to be attributed to dyspepsia.

In the above experiment upon myself, the whole group of symptoms was produced, with no sign of digestive trouble superadded.

6.—Tea retards the "waste," or retrograde metamorphosis of tissue, and thereby diminishes the demand for food.

It also diminishes the amount of urine secreted.

7.—Many of the symptoms of immoderate tea drinking are such as may occur without suspicion of tea being their cause; and we find many people taking tea to relieve the very symptoms which its abuse is producing.—*Dr. Morton, in Journal of Mental and Nervous Diseases.*